DOCUMENT RESUME

ED 069 377 PS 006 065

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TITLE A Cognitive-Developmental Analysis of Achievement and Moral Judgments.
PUB DATE [72]
NOTE 61p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Achievement; Age Differences; Analysis of Variance; *Cognitive Ability; *Evaluative Thinking; Learning Motivation; *Moral Values; Negroes; Racial Factors; Sex Differences; *Social Reinforcement

ABSTRACT

In a cognitive-developmental analysis of achievement and moral judgments, 300 black and white subjects aged 4-18 made moral and achievement evaluative judgments in sixteen situations. The situations differed according to the intent (effort) and ability of the person being judged, and in the objective consequences of the behavior. Analysis of variance revealed that the three evaluative dimensions of intent, ability, and outcome are systematically used in both achievement and moral appraisal. Further, there are highly significant age trends. In both the achievement and the moral conditions subjective intent replace objective outcome as the main determinant of judgment. However, following the age of 12 in the achievement context, objective outcome again becomes the more important determinant of evaluation. It is contended that society reinforces this more "primitive" developmental stage. Racial differences in the time of onset of the various stages were exhibited, although the sequence of evaluative stages was identical between racial and sex grouping. In addition, the data strongly support the position that achievement strivings are maintained by social reward, while moral behavior is controlled by social punishment. (Author)

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A Cognitive-Developmental Analysis of Achievement and Moral Judgments[1]

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The most prominent approach to the study of the development of achievement motivation is to search for differential child rearing antecedents that produce high versus low achievement needs. The usual methodology has been to relate contrasting parental practices, or the demographic correlates of those practices, to subsequent individual differences in fantasy or real achievement behaviors. The initial and oft-cited contributions of Winterbottom (1953) and Rosen and D'Andrade (1959), respectively reporting relationships between early independence and achievement training and later need for achievement, offered swift and exciting promise that the social origins of achievement motivation could be identified. But the ensuing research did not fulfill the early hopes, and the mysteries of the development of achievement motivation remain unraveled. Therefore, it may prove fruitful to turn towards a different research strategy or developmental paradigm than that associated with social learning theory.

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The cognitive-developmental theoretical orientation, exemplified in the writings of Piaget (1932) and Kohlberg (1969), offers one alternative approach to the understanding of change processes. The basic tenets of this viewpoint have been described in detail (Kohlberg, 1969; Langer, 1969; Piaget, 1960). Rather than stressing disparate parental training and individual differences, the cognitive approach examines the universals in development. A postulated invariant sequence of

developmental stages, and a hierarchical integration of these stages, is the center of focus. This theoretical conception has been most successful in explaining the growth of intellective functioning. However, it also has proven useful in the explication of moral judgment and moral behavior (Kohlberg, 1969; Piaget, 1932).

There are a number of logical and empirical reasons to believe that the cognitive-developmental orientation, and specifically the cognitive model advanced in the study of moral systems, can be applied to the study of achievement motivation. First, there appears to be moral components in achievement striving. For example, in a recent study individuals were asked: "What might cause them to feel guilty?" One high frequency response was "a failure to expend sufficient effort to accomplish one's aims" (Leedham, Signori, and Sampson, 1967, p. 918). It also has been reported that individuals are especially punishing of others who are able yet fail because of a lack of effort (Lanzetta and Hannah, 1969; Leventhal and Michaels, 1971; Weiner and Kukla, 1970). Thus, one feels guilty and is judged harshly for a failure to utilize his or her capacities. In addition, one source of motivation in group achievements is an experienced obligation toward the other group members.

Analysis of the cognitive components in the achievement system also supports the belief that a cognitive-developmental approach is applicable in the achievement domain. Individuals concerned with achievement-related goals have forward-looking time perspectives, realistic yet positive expectations of success, and a unique pattern of causal ascriptions for success and failure (Heckhausen, 1967; Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum, 1971). Thus, achievement

motivation is associated with a particular pattern of cognitive functioning.

The relationship between achievement needs and causal ascription is of special importance in the present context because causal attributions, and their effects on judgment, provide a decisive linkage between achievement and ethical judgment. It has been well documented that, among adults, one's intent to do the "right" or the "wrong" act, rather than the objective consequences of the act, primarily determines moral evaluation (see Maselli and Altrocchi, 1969). In a similar manner, among adults achievement judgments are affected by the amount of perceived effort expenditure, independent of the outcome of the action (Weiner and Kukla, 1970). Thus, both moral and achievement appraisal among adults are influenced by perceptions of subjective intent.

In sum, thus far it has been contended that the social learning approach has not been sufficiently productive in explaining the origins of achievement motivation. The moral aspects of achievement striving, the cognitive correlates of achievement needs, and the similarity in the judgmental role of intent in achievement and moral systems, suggest that it may be advantageous to employ a cognitive-developmental conception to understand the growth of achievement motivation. The cognitive approach to the study of morality may serve as a useful model in this endeavor.

The research reported in this paper, guided by the reasoning outlined above, examines the determinants of achievement judgment, and compares the developmental sequence of judgment observed within an achievement-related context with that displayed given an ethical situation. A modification of a paradigm successfully used by Weiner and

Kukla (1970) to discover the determinants of adult achievement appraisal was used. Weiner and Kukla (1970) asked subjects to pretend that they were grade school teachers, evaluating their students. The subjects were given information concerning the students' ability (present or absent), effort expenditure (present or absent), and their exam performance (excellent, fair, borderline, moderate failure, or clear failure). Thus, objective outcome and subjective intent, as well as level of ability, were the possible dimensions of evaluation. The subjects were required to dispense performance feedback to the pupils, conveyed by placing "stars" on the exam papers. Subjects were allowed to dispense from 1-5 gold stars (reward) or 1-5 red stars (punishment); it was not permissible to give both gold and red stars to the same pupil. Each subject evaluated all twenty hypothetical conditions (2 levels of ability X 2 levels of effort X 5 levels of outcome). Thus, for example, the subjects had to provide feedback to a pupil who had ability, did not expend effort, and had a borderline test result; and so forth.

The findings in this study revealed that the three dimensions included in the stimuli influence adult evaluation. Success was rewarded more than failure, high effort was rewarded more than a lack of effort, and low ability was more favorably evaluated than high ability. The latter result, although surprising, is understandable. Individuals who work hard and succeed in the absence of ability are most rewarded, while pupils who have ability but fail because of a lack of effort are most punished. Thus, lack of ability emerges as a positive evaluative factor. These findings have been replicated in a number of investigations (Rest, Nierenberg, Weiner, and Heckhausen, in press; Weiner and Kukla, 1970).

In the study reported here, a variant of the procedure used by Weiner and Kukla was administered to subjects aged 4-18. As already indicated, a moral as well as an achievement situation was appraised. There are many advantages in using this particular methodology, rather than the pro_ective or story format .ypically employed in cognitively-oriented studies of moral judgment. First, in the Weiner and Kukla paradigm verbal facility has minimal influence on the making of the response. Further, because the response is a numerical value rather than a complex verbal statement, the potential lack of inter-rater coding reliability is not a drawback. Thirdly, analysis of variance techniques can be used to ascertain interactions among the determinants of judgment. And finally, many responses may be obtained from each subject in a relatively short time period, in a group or individual setting. On the other hand, one disadvantage of this particular methodology is that it does not lend inself to the sensitive and complex classification scheme employed by Kohlberg and others.

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Since subjects respond in the present investigation to both a moral and an achievement situation, the determinants of judgment in each of these two motivational systems can be examined. In addition, the observed developmental trends in judgment may be compared and contrasted. Replication of prior findings reported in the pertinent morality literature, generated with projective-type methods, would enhance our confidence in these prior results. Further, such a replication would, to some degree, demonstrate the feasibility of using the Weiner and Kukla (1970) procedure to investigate the development of achievement judgments.

Method

Subjects

Subjects in the final sample were 300 children between the ages of 4-18. Twenty subjects were included in each of the 15 one-year age intervals. Of these 20 subjects, 10 were male and 10 were female. Further, within each of the sexes there were 5 white and 5 black subjects. In the data analysis the subjects were clustered into three-year age groupings (4-6, 7-9, 10-12, 13-15, and 16-18), yielding 15 subjects within each of 20 demographic groups (5 age X 2 sex X 2 racial categories). Nineteen subjects aged 4-5 were not included in the final data analysis because of a failure to understand the instructions. These subjects were relatively equally represented in the four Race X Sex demographic groupings.

Subjects were recruited through the Los Angeles school system. The 100 children aged 4-8 were enrolled in either a racially integrated Day Care Center (N = 56) or an integrated grammar school (N = 44). The Day Care Center and the grammar school were located in similar lower-middle class districts in Los Angeles. The 80 subjects aged 9-12 attended either the Day Care Center during the summer months (N = 20), playgroups associated with this Center (N = 40), or the grammar school (N = 20). The 4-12 year olds were tested individually by a liked-race female experimenter. Data concerning the socio-economic class of the individual subjects were not available, nor were achievement or IQ test scores.

The subjects aged 13-15 (N = 60) and 16-18 (N = 60) respectively attended a racially integrated Junior or Senior High school. They were tested in groups of ten, again in liked-race subject-experimenter pairings by the female experimenters. The Junior and Senior High schools were

located at different geographic districts within Los Angeles. The schools were selected because they are in lower-middle class areas within the city, they have racially mixed classes, and the principals were willing to participate in the research program.

Procedure

A moral and an achievement situation were presented to subjects in counterbalanced order. The achievement-related theme involved a child working at a puzzle task. The child was characterized according to ability (present or absent), "trying" (yes or no), and the consequences of the action (completion and success or incompletion and failure). More specifically, the younger subjects were told the following (with the experimenter elaborating any point when necessary):

> I am going to play a game with you, and in this game I am going to tell you about some children. After I tell you about each boy or girl, I want you to give them either gold or red stars, whichever you think that the boy or girl should get. Gold stars mean that you are pleased with the boy or girl and that you want to reward him or her. Red stars mean that you are not pleased with the boy or girl and you want to punish him or her. You can give either 1,2,3,4, or 5 gold or red stars, depending on how much you think the child deserves. Five gold stars would be a big reward and 1 gold star would be a little reward, while 5 red stars would be a big punishment and 1 red star a small punishment. Do you understand all that?
>
> Now lets practice a little. Bernie is a little boy who helped his mother with the dishes. What color star would you give him? How many stars? Susie is a little girl who would not clean up her room.

What color star would you give her? How many stars?

Now I am going to tell you about some other children. These children are in school and the teacher has given them a picture puzzle to put together. This is the kind of puzzle in which you fit the pieces together. Each child is supposed to put his or her puzzle together before the bell rings. I'll tell you about each child and you give him or her either gold or red stars.

The wording of the instructions was appropriately modified for the older children. For all subjects the instructions and the experimental conditions were read aloud. Two of the eight experimental conditions judged were:

a. Carolyn is good at working puzzles. She is not trying to do this puzzle. She does not get it put together. What color star will you give Carolyn? How many?

b. Paul is not good at working puzzles. He is trying to do this puzzle. He gets it put together. What color star will you give Paul? How many?

As indicated in the instructions, subjects evaluate the hypothetical performance by giving from 1-5 gold stars (reward) or 1-5 red stars (punishment). Each subject judged all eight experimental conditions (2 levels of ability X 2 levels of effort X 2 levels of outcome). A random order of the eight conditions or an inverse sequence of this order was randomly assigned to each subject.

Selection of a moral story posed many problems. The moral situation had to be describable with the ability, effort, and outcome dimensions used in the achievement condition. Further, the story contents had to be interpretable as either a positive or a negative moral action. The majority of themes used to investigate morality involve moral transgressions

in which not engaging in an action is judged as moral. But this is not equivalent to a positive ethical action, nor comparable to a high effort-successful outcome achievement episode. In addition, the ethical and the achievement situations had to be quite distinct. The range of moral situations that could be selected was greatly restricted because of these criteria.

The moral incident chosen was a variant of the "lost child" theme used by Piaget and others. A lost child was depicted as seeking help to get home in time for dinner. An older child in the story either did or did not know the correct directions (ability), did or did not want to help (intent), and the lost child either did or did not get home in time (outcome). More specifically, the younger subjects were told:

> A little boy or girl is lost and comes up to a big boy or girl and asks how to get home so he or she will be in time for dinner. I'll tell you about each big boy and big girl and you give them either gold or red stars. Remember, red stars are a punishment and gold stars a reward.

These instructions were elaborated when morality rather than achievement was the first theme. The instructions also were slightly modified for the older subjects. Two of the eight conditions judged were:

a. A little boy comes up to Tom and asks Tom to help him get home. Tom knows the way. He does not want to help. The little boy does not get home in time for dinner. What color stars will you give Tom? How many?

b. A little girl comes up to Bob and asks Bob to help her get home. Bob does not know the way. He wants to help. The little girl gets home in time for dinner. What color stars will you give Bob? How many?

Again all eight possible combinations of the evaluative dimensions

were judged, with evaluations ranging from 1-5 gold or red stars. A random order of the eight conditions or the inverse of this order was randomly assigned to each subject.

In sum, the investigation included 16 within-subject experimental conditions (2 motivational systems X 2 levels of ability X 2 levels of subjective intent X 2 levels of outcome), and 20 demographic groups (5 age X 2 sex X 2 racial categories). There are 320 experimental cells (16 experimental conditions X 20 demographic groups); each cell contains data from 15 subjects.

Results and Discussion

The data analysis begins with the findings concerning moral judgment, for there exists a well-known and pertinent literature to which these data may be compared. Then the achievement judgments are analyzed. Within each of the motivational systems a main effect is examined, followed by the relevant interactions to trace the factors contributing to the main effect. Lastly, the morality and achievement judgments are compared and contrasted.

Three rules concerning the separated morality and achievement data were adopted to facilitate the presentation and the interpretation of the results:

a. Only probability figures attaining a $p < .01$ confidence level are accepted as significant, with the exception of one anticipated result contained in the $.01 < p < .05$ confidence level. Twelve unforeseen findings significant between the $.01 < p < .05$ confidence interval are disregarded, seven in the morality and five in the achievement analysis.

b. Significant findings beyond third-order interactions are neglected, primarily because they are not clearly interpretable. Four

of the 44 fourth- and fifth-order interaction terms are significant beyond the $p < .01$ level, one in the morality and three in the achievement analysis.

c. Inasmuch as this paper focuses upon developmental trends, interactions among just the evaluative dimensions generally are ignored. Four significant interactions involving only ability, intent (effort), and/or outcome are neglected in the discussion of morality, and two in the examination of the achievement data.

Moral judgments

Table 1 shows the analysis of variance of the moral judgments. The main effects pertaining to the demographic variables connote whether there are differences in the overall use of reward and punishment

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Insert Table 1 about here

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as a function of age, sex, or race. The lack of a significant effect for age, $F(4, 280) = 1.56$, $p > .10$, indicates that moral judgments do not become significantly more lenient or harsh with increasing development. This finding is depicted in Figure 8 and discussed later in the paper, for it is of interest when considered in conjunction with the trend displayed in the achievement judgments. Table 1 also indicates a main effect for race, $F(1, 280) = 8.40$, $p < .01$. Whites are more punishing over the eight moral situations ($\bar{X} = -.25$) than are the blacks ($\bar{X} = .04$). This result primarily is accounted for by the differential developmental trends in the evaluation of outcome, which we turn to next.

Outcome. Table 1 indicates that outcome influences moral judgments, $F(1, 280) = 206.35$, $p < .001$. Positive outcomes (reaching home in time)

result in the older child being rewarded ($\bar{X}$ = .63), while negative outcomes (not coming home in time) eventuate in the punishment of the older child ($\bar{X}$ = -.84). The association between evaluation and outcome is affected by the age of the subjects. Table 1 and Figure 1 reveal that there is an Age X Outcome interaction, $F(4, 280) = 30.76$, $p < .001$. Figure 1 shows that with increasing development, reward for a positive outcome and punishment for a negative outcome diminish. That is, the final result

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Insert Figure 1 about here

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of the action becomes less of a determinant of moral judgment. Although the decrement in the use of outcome as an evaluative determinant is most pronounced immediately following the age of six, the final outcome of the moral story does remain a significant influence upon evaluation until the uppermost age group. The general finding that outcome diminishes as an influence upon moral judgment is consistent with the observations of Piaget (1932) and others. But the expiring importance of this factor for both positive and negative moral consequences until the age of eighteen had not been previously documented.

The race of the subjects modifies the interaction between outcome and age. The significant Race X Age X Outcome interaction, $F(4, 280) = 3.92$, $p < .01$, is depicted in Figure 2. The left hand portion of Figure 2 is a composite or resultant of the reward for a positive outcome minus

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Insert Figure 2 about here

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the punishment for a negative outcome. Thus, the figure depicts the

outcome main effect over age. Figure 2 reveals that white children between the ages of 7-12 are less prone to use outcome as a determinant of judgment than are the black children.

In the right half of Figure 2 the appraisal of the positive and negative outcomes are illustrated separately. The figure shows that the whites more quickly stop rewarding positive outcomes, and at a younger age display greater decrements in their punishment for negative outcomes, than the blacks. The difference in the reward for positive consequences between the white ($\bar{X}$ = 1.67) and the black ($\bar{X}$ = 3.25) subjects is primarily responsible for the main effect of race noted earlier. That is, over all moral conditions the blacks are more rewarding than the whites because they do not stop reinforcing positive moral outcomes.

A discussion of the developmental disparities between the races in the evaluative influence of outcome is withheld for the moment until the findings concerning intent also are presented. However, the <u>similarities</u> in the general developmental progression of the races, rather than their differences, should not be overlooked. The decreasing significance of outcome is displayed by both racial groups, and the resultant judgments of the oldest age groups are quite similar, regardless of the races of the respondents. In addition, both the female and the male subjects display this developmental trend.

One additional finding of interest depicted in the data of the white subjects is that the rate of judgmental change is differentially influenced by the positivity or negativity of the outcome. Positive consequences discontinue to be a determinant of moral appraisal sooner than do negative

consequences. The shape of the function given a positive outcome approaches a hyperbole for the whites, while the punishment function over age for negative outcomes is relatively linear. Trend analyses reveal that a linear component accounts for 75% of the variance due to age given negative outcomes, but only 41% of the variance given a positive outcome. The psychological significance of this differential "rate of disuse" among the white subjects is discussed after additional data are introduced.

Intent. Table 1 also indicates that intent is a significant determinant of moral appraisal, $F(1, 280) > 1{,}000$, $p < .001$. Good intentions (wanting to help) are rewarded ($\bar{X} = 2.36$), while bad intentions (not wanting to help) are punished ($\bar{X} = -2.58$). In addition, there is a significant Age X Intent interaction, $F(4, 280) = 39.96$, $p < .001$. Figure 3 reveals that both reward for good intent and punishment for bad intent increase with age.

Insert Figure 3 about here

In addition, the Age X Intention interaction varies with the race of the respondent; the Race X Age X Intention interaction reaches statistical significance, $F(4, 280) = 4.02$, $p < .01$. This three-way interaction is shown in Figure 4. The left side of Figure 4 graphs the resultant or

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Insert Figure 4 about here

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the difference between the reward for good intent minus the punishment for bad intent. The figure illustrates that the distinction between good and bad intent is a more salient factor in the judgments of the younger

white than the younger black subjects. In the right side of Figure 4 the appraisal of good and bad intents are illustrated separately. It is evident that relatively similar racial differences are displayed in both the positive and negative intent conditions.

Outcome and intent. As already indicated, it has been well documented that with increasing development subjective intent replaces objective outcome as the main determinant of moral judgment. The left half of Figure 5 shows the appraisal of outcome and intent as a function of the age of the subjects. Outcome represents the reward for positive outcomes minus the punishment for negative outcomes; intent includes

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Insert Figure 5 about here

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the reward for positive intent minus the punishment for negative intent. Thus the left half of Figure 5 depicts the evaluative importance of the outcome vs. intent dimensions. The right half of Figure 5 shows the positive outcome-positive intent and negative outcome-negative intent components of the resultant graph on the left. It is quite evident from Figure 5 that the data strongly support the prior findings in the moral judgment literature, given either positive or negative outcomes and intents or the resultant figures. Apparently, structures representing intent develop later than outcome or consequence structures, and progressively replace outcome as the main evaluative dimension in moral judgments.

In the prior pages of this paper it was revealed that there are racial differences in the rate of disuse of outcome information and the rate of use or development of intent structures. The reasons for

the judgmental disparities between the races are not at all clear. Social class and IQ data describing the individual subjects were not available, and we have no knowledge concerning the socialization practices of the parents. Any of these factors theoretically could accelerate or retard the use of intent relative to outcome information. In addition, the different environments of the subjects might encourage the development and use of disparate structures.

From our perspective, it is impressive that in spite of the differential rates of structural growth and/or use, the sequence of developmental trends displayed by the two races, and by the four Race X Sex demographic groups, are identical. Figure 6 depicts the intent (good minus bad) and outcome (positive minus negative) data for the white and the black subjects.

Insert Figure 6 about here

The Race X Grade X Effort X Outcome interaction does not approach significance, $F < 1$. Figure 7 rather dramatically shows the similarity of the black (left side) and white (right side) data, graphing the positive outcome-positive intent and negative outcome-negative intent pairings separately. As moral theorists with a cognitive orientation have postulated, there appears to be a fixed sequence of moral stages, although

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Insert Figure 7 about here

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there may be disparities in the exact rate of change. Further, the maximal decrements in the use of outcome information, and the maximal increments in the use of intent information, occur around the ages of

six-seven, which Piaget postulates as the modal time for the onset of concrete operations.

Ability. Table 1 indicates that there is a significant main effect for ability, $F(1, 280) = 22.28$, $p < .001$. High ability is marginally rewarded ($\bar{X} = .07$), while low ability is punished ($\bar{X} = -.28$). We think that this unexpected finding is due to the particular moral story selected. In one of the experimental conditions, a boy or a girl wants to help, but does not know the directions. Thus, if the younger child does reach home, the positive consequences may not be ascribed to the older child. The absence of a person attribution should mitigate the rewards dispensed (see Weiner, Heckhausen, Meyer, and Cook, 1972). On the other hand, if the lost child does get home when the older child wants to help and knows the direction, then the attribution for the positive consequence will be to the older child. Rewards should be given in this condition. This asymmetry in causal ascriptions for positive outcomes could mediate the differential reward and punishment for high and low ability. There is data in support of this interpretation; only in the positive outcome condition is high ability ($\bar{X} = .92$) rewarded more than low ability ($\bar{X} = .34$).

However, other interactions in the data hint that there may be more complex explanations for the differential evaluation of high versus low ability. There is a significant Sex X Ability interaction, $F(1, 280) = 12.92$, $p < .001$. Only the females reward high more than low ability. This relationship does not interact with the age of the female subjects, $F < 1$. There also is a Sex X Ability X Outcome interaction, $F(1, 280) = 6.89$, $p < .01$. This interaction denotes that the differential appraisal of high and low ability by the females occurs only within the positive

outcome condition. And finally, the ability effect is displayed primarily by white subjects in the success condition; there is a significant Race X Ability X Outcome interaction, $F(1, 280) = 15.59$, $p < .001$.

We have no intelligible explanations for the interactions described above, although, speaking generally, a main effect of ability in moral judgments is understandable. Moral judgments among adults are affected by the situation in which the behavior is embedded. Inasmuch as ability level in part defines the particular circumstances associated with an action, it may influence moral appraisal. Furthermore, moral situations apparently exist in which a lack of ability will be positively evaluated. For example, a poor person repaying a debt by taking a second job is likely to be judged as more moral, and be more highly approved, than a rich person with the same positive intent repaying the same amount of debt. The positive ability effect in this study therefore is not expected to generalize across all moral situations. Nonetheless, the data do call attention to a neglected factor in the evaluation of moral action.

Summary. The data reported thus far strongly support the findings in prior studies of moral judgment. A developmental sequence in the determinants of judgment is displayed, with objective outcome giving way to subjective intent as the main dimension of moral evaluation. This shift in dimensional salience first occurs near the age of six. In addition, the following new findings were reported:

a. A progressive decline in the use of objective outcome information and an increment in the use of subjective intent information, given both positive and negative outcomes and intents. These changes occur until the age of eighteen.

b. Differential rates of decline for the rewarding of positive moral

outcomes and the punishment of negative moral outcomes among the white subjects, with positive outcomes discounted earlier.

c. Puzzling racial differences in the evaluation of moral situations as a function of the age of the subjects. The blacks maintain the use of outcome information longer than the whites, and are later in using intent information.

d. The use of ability information as a factor in moral appraisal.

These data were gathered with an objective methodology that circumvents some of the difficulties associated with projective techniques, and allows for complex statistical analyses.

In conclusion, prior findings in the area of moral judgment are replicated when the Weiner and Kukla methodology is employed, and new relationships are uncovered. Given this assurance, we now examine the developmental sequence in achievement judgments, which is the main goal of the present research.

Achievement judgments

As in the analysis of moral judgments, we begin by reporting a main effect, directly followed by the relevant interactions linked with that effect. The analysis of variance of the achievement judgments is shown in Table 2. Turning first to the demographic variables, there is a significant main effect for age, $F(4, 280) = 22.21$, $p < .001$. This effect is illustrated in Figure 8 along with the corresponding moral judgment data. Figure 8 shows that with increasing age the achievement

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Insert Table 2 and Figure 8 about here

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judgments over all eight conditions become more lenient, or more

positively reinforcing. This main effect does not interact with the other demographic variables; separate analyses reveal that in all four Race X Sex groups there is a significant developmental trend ($p < .01$) for resultant reward to increase with age. Weiner and Kukla (1970) also report that among their college student subjects more than 80% dispense more reward than punishment. Discussion of these age trends is postponed until the moral and achievement systems are compared and contrasted later in the paper.

Outcome. Moving to the evaluative dimensions, Table 2 indicates that outcome is a highly significant main effect, $F(1, 280) = 836.73$, $p < .001$. Success in achievement activities is rewarded ($\bar{X} = 2.21$), while failure is punished ($\bar{X} = -1.33$). These findings also are in accord with data reported by Weiner and Kukla (1970). Figure 9 shows that the magnitude of this effect is relatively stable across all age groups. There is a tendency among the older subjects to be both more rewarding for success and less punishing of failure than the younger subjects. This shift in part accounts for the main effect of age reported in the prior paragraph.

Insert Figure 9 about here

Effort. There also is a highly significant main effect for effort, $F(1, 280) = 542.07$, $p < .001$. Independent of success or failure, high effort is rewarded ($\bar{X} = 1.79$) while lack of effort is punished ($\bar{X} = -.91$). This finding also is reported by Weiner and Kukla (1970). In addition, effort interacts with age, $F(4, 280) = 14.26$, $p < .001$. Figure 10 shows that there is a curvilinear relationship between the magnitude of the main effect of effort and the age of the subjects. The difference

between the reward dispensed for effort and the punishment given for a

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Insert Figure 10 about here

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lack of effort is maximal among the 10-12 year olds, and declines in a somewhat symmetrical function for the younger and older subjects. For the resultant effort data, 65% of the variance due to age is accounted for by a quadradic component. It is apparent from Figure 10 that this age trend primarily is due to the curvilinear relationship between punishment for lack of effort and the age of the subjects. Analysis of the evaluation for lack of effort reveals a significant effect for age, $F(4, 295) = 15.04$, $p < .001$, with 55% of this effect accounted for by a quadradic component.

In addition, there is a significant Race X Age X Effort interaction, $F(4, 280) = 4.46$, $p < .01$. The left hand portion of Figure 11 shows this interaction for the resultant effort data (reward for effort minus the punishment for a lack of effort), while the right half of Figure 11 depicts the positive evaluation of effort and negative evaluation of lack of effort separately. The right side of Figure 11 shows that positive effort is a greater determinant of reward, and lack of effort a greater

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Insert Figure 11 about here

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determinant of punishment, among the younger white than the younger black children. On the other hand, effort is a lesser determinant of judgment among the older white than the older black subjects. In general, the shifts in the appraisal of effort by the whites tend to

precede the shifts by the blacks. Again, the meaning and interpretation of these racial differences is not evident, given the limited data that we collected.

Outcome and effort. Table 1 indicates that there is a significant Grade X Outcome X Effort interaction, $F(4, 280) = 8.72$, $p < .001$. This interaction is shown in the left half of Figure 12, which depicts the main effects of outcome (reward for success minus punishment for failure) and effort (reward for effort minus punishment for a lack of effort) for the five age groups. The right half of Figure 12 shows the separate success-effort and failure-lack of effort components. The figure shows

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Insert Figure 12 about here

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clearly that among the younger children outcome is a more important evaluative determinant in achievement situations than is effort. This relationship is reversed among the 10-12 year olds, who weight effort more heavily than outcome in their evaluations. But this hierarchy is again reversed following the age of 12. Data from prior studies (Weiner and Kukla, 1970; Rest, Nierenberg, Weiner, and Heckhausen, in press) also indicate that outcome is more important in appraisal than effort among college-age students. Thus, it appears that persons high school age and older weight outcome more than effort in determining reinforcements for achievement actions, although effort does remain an important evaluative dimension. Figure 12 also shows that effort and outcome appear to be complementary. As outcome increases in importance, effort recedes, and vice versa. This developmental trend characterizes both the white and black subjects.

What might this developmental progression signify? It appears that among the younger children structures representing effort are only weakly developed. Appraisal therefore is based upon the objective consequences of the action. Then, with the later development of structures representing effort and the onset of concrete and formal operations, objective outcome is replaced as the main evaluative dimension by more subjective factors. But in our society achievement products, not efforts, count. That is, the more "primitive" of the judgmental dimensions is reinforced by society. The older subjects therefore revert to their earlier mode of functioning. Although the young and the old children are somewhat similar in their phenotypical judgment behavior, it is contended that they differ genotypically. Among the younger children effort structures are not used because they have yet to develop. Among the older children the effort structures are developed, but they are used to a lesser extent than the outcome information.

Ability. Table 2 indicates that there is no main effect of ability, $F<1$. However, there is a marginally significant Age X Ability interaction, $F(4, 280) = 3.07$, $p < .05$. This interaction is portrayed in Figure 13, which plots the appraisal of ability, lack of ability, and the resultant or difference between these two appraisals, as a function of the age of

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Insert Figure 13 about here

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the subjects. The difference function shows that with increasing development lack of ability emerges as a positively evaluated factor. Among the subjects 16-18 years of age, individuals who succeed in spite of a lack of ability are rewarded more ($\bar{X} = 3.05$) than those who succeed with ability ($\bar{X} = 2.09$). In addition, individuals who fail with ability are

punished more ($\bar{X}$ = -.59) than those who fail without ability ($\bar{X}$ = -.40). There is suggestive evidence from prior research (Rest, Nierenberg, Weiner, and Heckhausen, in press) that this Ability X Outcome interaction is mediated by differential inferences about effort expenditure, which is highly valued (see Figure 10). To succeed without ability requires great effort, while failure given ability indicates that no effort was expended. The perception of a compensatory relationship between ability and effort, and an understanding of the corresponding conceptual schemata of necessary and sufficient causality for success and failure, requires a complex and well-developed cognitive network. Thus, the positive evaluation of lack of ability was anticipated after the stage of formal operations, generally believed to be around the age of eleven. Among our subjects the positive appraisal for a lack of ability is first clearly displayed by the 16-18 year olds. Weiner and Kukla (1970) and Rest, Nierenberg, Weiner, and Heckhausen (in press) report an effect of greater magnitude for low ability among their college subjects, although this effect is not always displayed.

Summary. The data concerning achievement judgments are relatively unambiguous. Success is rewarded more than failure, effort is rewarded more than lack of effort, and lack of ability is a positive evaluative factor for the oldest age group. Among the younger children achievement evaluation is determined by the outcome (success or failure) of the action. As effort structures develop, the amount of work expended becomes the principal determinant of evaluation. However, with still further development outcome replaces effort as the more important evaluative dimension. It is contended that this reversal to an earlier mode of functioning is in response to the reward contingencies in our environment. The general

sequence of judgment from objective outcome to subjective intent and back to objective outcome is displayed by the four Race X Sex groupings, although the black subjects are later in making effort the salient evaluative dimension than are the whites. There also is a general developmental trend towards leniency in the evaluation of the achievements of others.

Morality and achievement judgments: A comparison

Direct comparisons of moral and achievement judgments are questionable. We did not sample a variety of achievement and moral situations; rather, one particular achievement and one particular moral incident was judged. The two situations differ in a number of respects. For example, the moral story involves an interpersonal interaction, while the achievement context is asocial. In addition, in the achievement situation ability and effort may be perceived as compensatory. That is, lack of ability could be overcome with extra effort. But in the moral context it is not likely that intent can compensate for a lack of knowledge. In addition to the different characteristics of the stimulus materials, the underlying scales employed to evaluate moral and achievement situations may not be identical. Nonetheless, direct comparisons between the achievement and moral judgments yield provocative data that are consistent with some current theoretical conceptions. In addition, the interactions displayed and the systematic age trends encourage the belief that the reported findings are neither limited to the particular situations selected nor artifacts due to an incomparability of the evaluative scales.

Overall evaluation. Figure 8 shows the combined positive and negative reinforcement of the eight achievement versus the eight moral conditions. The figure indicates that there is a significant motive system main effect, $F(1, 290) = 86.97$, $p < .001$. Achievement-related actions, over all conditions,

are rewarded ($\bar{X}$ = .44), while moral-related actions tend to eventuate in punishment ($\bar{X}$ = -.11). Further, Figure 8 shows that there is an Age X Motive system interaction, $F(4, 290) = 10.06$, $p<.001$. Among the youngest children overall evaluation is identical given achievement or moral judgments. But achievement judgments become significantly more positive with increasing development, while moral judgments remain relatively stable, and negative, over ages. The Age X Motive system interaction is displayed by the four Sex X Race groups ($p<.01$).

We interpret this interaction, and much of the ensuing analyses, as evidence that achievement primarily is a reward system, while morality primarily is a punishment system (Kelley, 1971). In achievement situations one is rewarded for distinctive actions, or behaviors at variance with the social norms. On the other hand, in moral situations one is generally punished for behaviors different from the social norms. The emphasis in achievement is to do something that others cannot; the emphasis in morality is <u>not</u> to deviate from the actions of others. Comparisons of the evaluation of outcome and intent in achievement and moral contexts supports the achievement-reward system versus morality-punishment system linkages.

<u>Outcome</u>. The left half of Figure 14 depicts the difference in the evaluation of positive (success) and negative (failure) outcomes for the moral and the achievement conditions. The figure shows that there is an Outcome X Motive system interaction, $F(1, 290) = 194.93$, $p<.001$. Outcome is a more important evaluative factor in the achievement than in the moral

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Insert Figure 14 about here

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situation. The left half of Figure 14 discloses that positive outcomes

in achievement situations result in greater reward than positive moral outcomes, $F(1, 295) = 233.49$, $p < .001$, while negative achievement outcomes generate more punishment than negative moral outcomes, $F(1, 295) = 32.09$, $p < .001$. Thus, the difference in the evaluations is more pronounced given positive than negative outcomes.

Figure 15 shows the effects of age upon the Outcome X Motive system interaction. There is a significant Age X Outcome X Motive system interaction, $F(4, 290) = 11.57$, $p < .001$. The left half of Figure 15 shows that the difference between the evaluation of positive and negative outcomes

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Insert Figure 15 about here

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in the achievement and moral conditions diverges over ages. That is, with increasing development, differential effects of outcome information are displayed. While outcome remains a significant evaluative factor for achievement judgments, it gradually recedes in judgments of morality, and is virtually eliminated as a determinant of moral evaluation among the oldest age group. In the right half of Figure 15 the positive and the negative outcome judgments for achievement and morality are illustrated separately. The figure reveals that for both achievement and moral judgments the stigma of a negative outcome diminishes over age. The Age X Motive system interaction does not approach significance, $F(4, 295) = 1.14$, $p > .25$. On the other hand, success for achievement outcomes grows in reward value, while positive outcomes in moral situations become less and less of a positively valued factor. Thus, there is a significant Age X Motive system interaction in the judgment of positive outcomes, $F(4, 295) = 17.60$, $p < .001$. These data support the position that achievement behaviors,

but not moral actions, are maintained by social rewards.

Subjective intent. The right half of Figure 14 shows the difference in the evaluation of positive intent (effort) and negative intent (lack of effort) between the moral and the achievement conditions. The figure shows that subjective intent is a more important evaluative factor in moral than in achievement judgments, $F(1, 290) = 234.44$, $p < .001$. Positive moral intents are rewarded more than high effort, $F(1, 295) = 43.60$, $p < .001$, while negative moral intents are punished more than a lack of effort, $F(1, 295) = 276.12$, $p < .001$. Thus, the difference in the evaluation of negative intents is more pronounced than the difference in the appraisal of positive intent.

Figure 16 depicts the effects of age on the Motive system X Subjective intent interaction. The analysis of variance of these data reveals a significant Age X Motive system X Subjective intent interaction, $F(4, 290) = 11.34$, $p < .001$. The left half of Figure 16 shows the resultant of the

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Insert Figure 16 about here

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appraisal for effort minus the appraisal for a lack of effort for the two motivational systems over age. It is evident from Figure 16 that intent becomes an increasingly important evaluative factor in the moral system, while for achievement judgments the influence of intent is maximal among the middle age group of children, and then decreases in strength with further development. In the right half of Figure 16 this interaction is plotted separately for positive and negative intents and efforts. It is evident from the right half of Figure 16 that the developmental trends in achievement and moral systems are identical given positive subjective

intent. The Age X Motive system interaction does not approach significance, $F<1$. However, negative intent becomes increasingly punished in the moral, but not the achievement, condition. Thus, there is a significant Age X Motive system X Subjective intent interaction given negative intent, $F(4, 295) = 17.68$, $p<.001$. This provides suggestive evidence that moral actions, but not achievement strivings, are maintained by social punishment.

Outcome and intent. Comparison of the left and right halves of Figure 14 indicates a significant Motive system X Outcome X Intent interaction, $F(1, 290) = 16.28$, $p<.001$. Outcome is the more important evaluative determinant of achievement judgments, while intent is the more important determinant of appraisal given moral judgments. Further, this interaction also is a function of the age of the subjects; there is a significant Age X Motive system X Outcome X Intent interaction, $F(4, 290) = 3.44$, $p<.01$. There are a number of ways to plot this four-way interaction to convey its meaning. In Figure 17 the judgments for each of the four outcome X effort combinations are plotted over age in the achievement and the moral conditions. The top and the bottom pairs of lines depict the trends over

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Insert Figure 17 about here

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ages when subjective intent and outcome are congruent; that is, when high intent (effort) is paired with a positive outcome (success), while low intent (lack of effort) is paired with a negative outcome (failure). The figure indicates that the age trends in the achievement and moral judgments are identical in these conditions. Further, consistent with the prior discussion, positive achievement situations are more rewarded than positive moral situations, while negative moral situations are more punished than

negative achievement situations. The intermediate pairs of lines plot the resultant of a conflict between outcome and intent --- positive intent is paired with a negative outcome, and negative intent is linked with a positive outcome. Figure 17 shows that when the intent is negative and the outcome is positive, moral judgments become increasingly punished over age, while achievement judgments after the age of twelve become more positive. The moral judgments among the older children thus primarily reflect the punishment for bad intent; the achievement judgments primarily reflect the reward for positive outcomes. Stated more concretely, not wanting to help, although the child does get home, becomes increasingly negatively valued, while success without effort grows in positive value after the age of twelve. This reaffirms the contention that achievement is a reward system, while morality is a punishment system. Furthermore, the disparate characteristics of the two systems are in part mediated by differential weightings given to the outcome and intent evaluative factors. In achievement situations positive outcomes are weighted more heavily than negative intents, while in moral contexts negative intents are weighted more heavily in the final appraisal decision than positive outcomes.

The second conflict depicted in Figure 17 pits positive intent or effort against a negative outcome or failure. Here it can be seen that moral judgments become increasingly more positive than achievement judgments, although the developmental trends are identical in direction. More specifically, wanting to help a child get home, even if the outcome is not positive, is rated more positively than trying that eventuates in failure.

In sum, the data supporting the conjecture that achievement is a reward system while morality is a punishment system are:

a. Achievement actions become more rewarded over age, while the evaluation of moral acts remains relatively stable and negative over developmental periods (Figure 8).

b. Positive achievement outcomes become more rewarded over age while positive moral outcomes recede as a determinant of positive moral appraisal. There are no differential trends between the achievement and moral systems in the punishment for negative outcomes (Figure 15, right half). Further, among the white subjects, there is a differential rate of disuse of the positive and negative information in the moral situation. Positive outcomes are sooner discounted as a determinant of appraisal than negative outcomes (Figure 2, right half).

c. Negative moral intents become more punished over age, while lack of effort in achievement contexts is less punished following the age of twelve. There are no differential developmental trends between the motive systems in the reward for good intents (Figure 16, right half).

d. Given a situation in which a bad intent eventuates in a positive outcome, the achievement act is rewarded while the moral act is punished. This differential evaluation increases with development. Given a situation in which a good intent eventuates in a negative outcome, the moral act is rewarded more than the achievement act. This differential positive evaluation also increases as a function of the age of the subjects (Figure 17).

Developmental stages and sequences. The initial question we hoped to answer with this research was, "Are there stages and sequences in the development of achievement judgments, and are these stages and sequences comparable to those discovered in moral judgments?" The data shown in Figure 18 depict the evaluation of the intent and outcome dimensions for

both the achievement and the moral judgments over age. It is evident that systematic stages in the development of both moral and achievement judgments are displayed, and that in both systems outcome and intent are highly significant evaluative determinants. In both the achievement

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Insert Figure 18 about here

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and moral contexts objective outcome is the more important evaluative dimension among the younger children. Further, in both systems subjective intent replaces objective outcome as the more heavily weighted factor by the age of twelve, although this change occurs sooner in the moral context. However, following the age of twelve moral judgments continue to be primarily determined by intent, while outcome again becomes the more important evaluative factor in achievement-related situations. Apparently, both outcome and intent structures are available to children by the age of seven or eight; the structures are differentially used or weighted as a function of the age of the subjects and the motive system under evaluation. This general pattern of results is displayed in all four Race X Sex demographic groups.

General conclusion

As indicated above, the goal of this research was to discover if there are systematic and general sequences in the judgment of achievement actions. It is quite clear that there are judgmental stages, and that these stages are identical across various demographic groups, even though there are disparate rates of development in the onset of the stages. Furthermore, there are clear similarities and differences between the determinants of achievement and moral judgments.

One next logical step in the cognitive-developmental analysis of achievement concerns is to specify the implications of the judgments for achievement behaviors. (This does not at all imply that the study of judgments per se is not of value.) The jump from appraisal to behavior is difficult to make. A few general avenues for future research which occur to us are:

a. Stages in achievement behavior. There appears to be a stage-like progression in the competitive aspect of achievement behavior. Intrapersonal competition is manifested by very young children, while interpersonal competition develops around the age of six (Veroff, 1969). The stages of achievement competition are mediated by cognitive abilities, such as the capacity to use social norm information as an attributional cue. In short, the relationship between cognitive and behavioral stages may be a fruitful area of investigation.

b. School satisfaction and academic performance. Our data indicate that the achievement evaluation by adults (teachers) may not be congruent with the value placed upon achievement performance by younger age groups. While adults primarily use outcome to determine reward and punishment, the 10-12 year age group employs effort as the main determinant of appraisal. Further, while adults do believe that effort expenditure should influence evaluation, the youngest children do not perceive "trying" as an evaluative dimension. We wonder if these discrepencies are a source of dissatisfaction in school that interfere with academic performance. Further, if the data concerning racial differences are reliable, then in integrated classrooms there might be different interpretations and misunderstandings of the evaluation process between the racial groupings. The general point being made is that the "fit" between teacher and student dimensions of evaluation could be an important classroom variable.

c. Effort ascriptions and achievement motivation. There is strong evidence that individuals differing in their level of achievement needs have disparate causal attributions for achievement performance. Persons high in achievement needs perceive effort X outcome covariation; that is, they believe that success is due to hard work while failure results from a lack of effort. Persons low in achievement needs apparently do not believe in the efficacy of effort expenditure (Weiner, et al., 1971).

Inasmuch as achievement needs are mediated by perceptions concerning effort as a causal factor, one manner in which achievement strivings might be enhanced is by promoting the development and use of effort structures. Headstart programs are recognizing that motivational (affective) factors, as well as intellective functioning, must be examined. One interesting aspect of our data is that a subset of subjects employ subjective intent information to evaluate moral acts, but do not use intent evidence in the appraisal of achievement behavior. Perhaps individuals with this pattern of appraisal, which indicates that intent structures are available but are not being used in achievement contexts, are especially good targets for the induction of achievement motivation.

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Table 1

Analysis of Variance, Morality Judgments

Source	df	MS	F
Race (R)	1	49.31	8.41**
Age (A)	4	9.12	1.55
Sex (S)	1	0.67	0.11
Outcome (O)	1	1299.48	206.35***
Intent (I)	1	14642.16	>1000.00***
Ability (Ab)	1	76.33	22.27***
R x A	4	3.18	0.54
R x S	1	1.04	0.18
R x O	1	4.51	0.72
R x I	1	42.13	4.22*
R x Ab	1	0.74	0.21
A x S	4	6.60	1.13
A x O	4	190.55	30.26***
A x I	4	398.81	39.96***
A x Ab	4	5.97	1.74
S x O	1	5.61	0.89
S x I	1	18.38	1.84
S x Ab	1	44.28	12.92***
O x I	1	25.63	6.75**
O x Ab	1	31.74	9.26**
I x Ab	1	491.41	99.19***
R x A x S	4	7.25	1.24
R x A x O	4	24.67	3.92**
R x A x I	4	40.13	4.02**

Source	df	MS	F
R x A x Ab	4	8.98	2.62*
R x S x O	1	13.20	2.10
R x S x I	1	9.62	0.96
R x S x Ab	1	4.17	1.22
R x O x I	1	10.93	2.88
R x O x Ab	1	53.40	15.59***
R x I x Ab	1	4.16	0.84
A x S x O	4	0.95	0.15
A x S x I	4	27.86	2.79*
A x S x Ab	4	3.36	0.98
A x O x I	4	7.41	1.95
A x O x Ab	4	1.74	0.51
A x I x Ab	4	6.88	1.39
S x O x I	1	22.04	5.80*
S x O x Ab	1	23.60	6.89**
S x I x Ab	1	5.60	1.13
O x I x Ab	1	35.03	10.87***

* $p<.05$

** $p<.01$

*** $p<.001$

Table 2

Analysis of Variance, Achievement Judgments

Source	df	MS	F
Race (R)	1	0.48	0.08
Age (A)	4	135.26	22.21***
Sex (S)	1	0.40	0.07
Outcome (O)	1	7504.81	836.73***
Effort (E)	1	4374.00	542.07***
Ability (Ab)	1	0.20	0.04
R x A	4	9.69	1.59
R x S	1	2.94	0.48
R x O	1	1.40	0.16
R x E	1	9.37	1.16
R x Ab	1	0.24	0.05
A x S	4	7.14	1.17
A x O	4	22.33	2.49
A x E	4	115.08	14.26***
A x Ab	4	14.56	3.07*
S x O	1	0.12	0.00
S x E	1	0.35	0.00
S x Ab	1	6.83	1.44
O x E	1	38.51	7.84**
O x Ab	1	7.04	2.25
E x Ab	1	12.04	3.98*
R x A x S	4	6.02	0.99
R x A x O	4	16.73	1.87
R x A x E	4	36.01	4.46**

Source	df	MS	F
R x A x Ab	4	6.54	1.38
R x S x O	1	58.90	6.57*
R x S x E	1	17.34	2.15
R x S x Ab	1	0.42	0.01
R x O x E	1	3.38	0.69
R x O x Ab	1	2.16	0.69
R x E x Ab	1	0.26	0.01
A x S x O	4	18.34	2.04
A x S x E	4	4.14	0.51
A x S x Ab	4	3.92	0.83
A x O x E	4	42.80	8.72***
A x O x Ab	4	8.10	2.59*
A x E x Ab	4	4.92	1.63
S x O x E	1	0.20	0.00
S x O x Ab	1	3.52	1.13
S x E x Ab	1	14.73	4.87*
O x E x Ab	1	74.20	23.40***

* $p < .05$

** $p < .01$

*** $p < .001$

Figure Captions

Fig. 1. Reward for positive moral outcomes and punishment for negative moral outcomes as a function of age.

Fig. 2. Resultant of the reward for positive moral outcomes minus the punishment for negative outcomes (left side), and the separated positive and negative outcome condition judgments (right side), for white and black subjects as a function of age.

Fig. 3. Reward for positive moral intent, punishment for negative moral intent, and the resultant of reward for good intent minus punishment for bad intent, as a function of age.

Fig. 4. Resultant of the reward for positive moral intent minus the punishment for negative moral intent (left side), and the separated good and bad intent condition judgments (right side), for black and white subjects as a function of age.

Fig. 5. Resultant moral outcome and intent judgments (left side), and the separated good intent, positive outcome, bad intent, and negative outcome judgments (right side), as a function of age.

Fig. 6. Resultant moral outcome and intent judgments for black and white subjects as a function of age.

Fig. 7. Separated good moral intent, positive moral outcome, bad moral intent, and negative moral outcome judgments for black (left side) and white (right side) subjects, as a function of age.

Fig. 8. Total reinforcement in the achievement and moral conditions as a function of age.

Fig. 9. Reward for achievement success and punishment for achievement failure as a function of age.

Fig. 10. Reward for positive achievement effort, punishment for a lack of effort, and the resultant of the reward for effort minus punishment for lack of effort, as a function of age.

Fig. 11. Resultant effort judgments (left side), and separated judgments for effort and a lack of effort (right side), for black and white subjects as a function of age.

Fig. 12. Resultant achievement outcome and effort judgments (left side), and the separated effort, success, lack of effort, and failure judgments, as a function of age.

Fig. 13. Ability, lack of ability, and the resultant ability minus lack of ability achievement judgments, as a function of age.

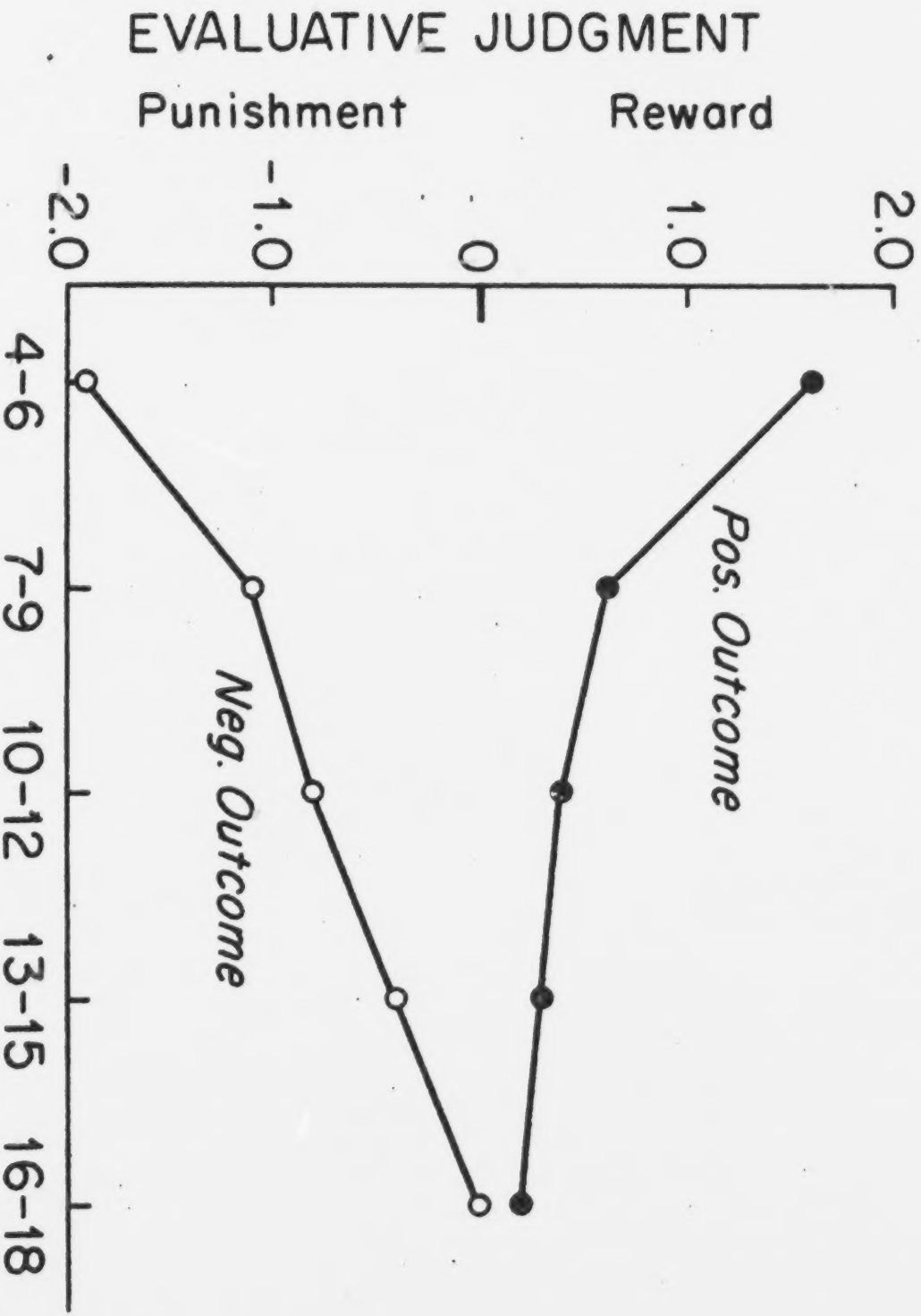
Fig. 14. Judgments in the achievement and moral conditions as a function of outcome (left side) and subjective intent (right side).

Fig. 15. Resultant outcome judgments in the achievement and moral conditions (left side), and the separated achievement and moral judgments for positive and negative outcomes (right side), as a function of age.

Fig. 16. Resultant subjective intent judgments in the achievement and moral conditions (left side), and the separated achievement and moral judgments for positive and negative subjective intent (right side), as a function of age.

Fig. 17. Judgments in the achievement and moral conditions as a function of the congruency between outcome and intent. Like-sign pairings are congruent, opposite-sign pairings indicate conflict.

Fig. 18. Resultant of the outcome and subjective intent judgments for the achievement and moral conditions as a function of age.


EVALUATIVE JUDGMENT
Punishment
Reward
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-1.0
0
1.0
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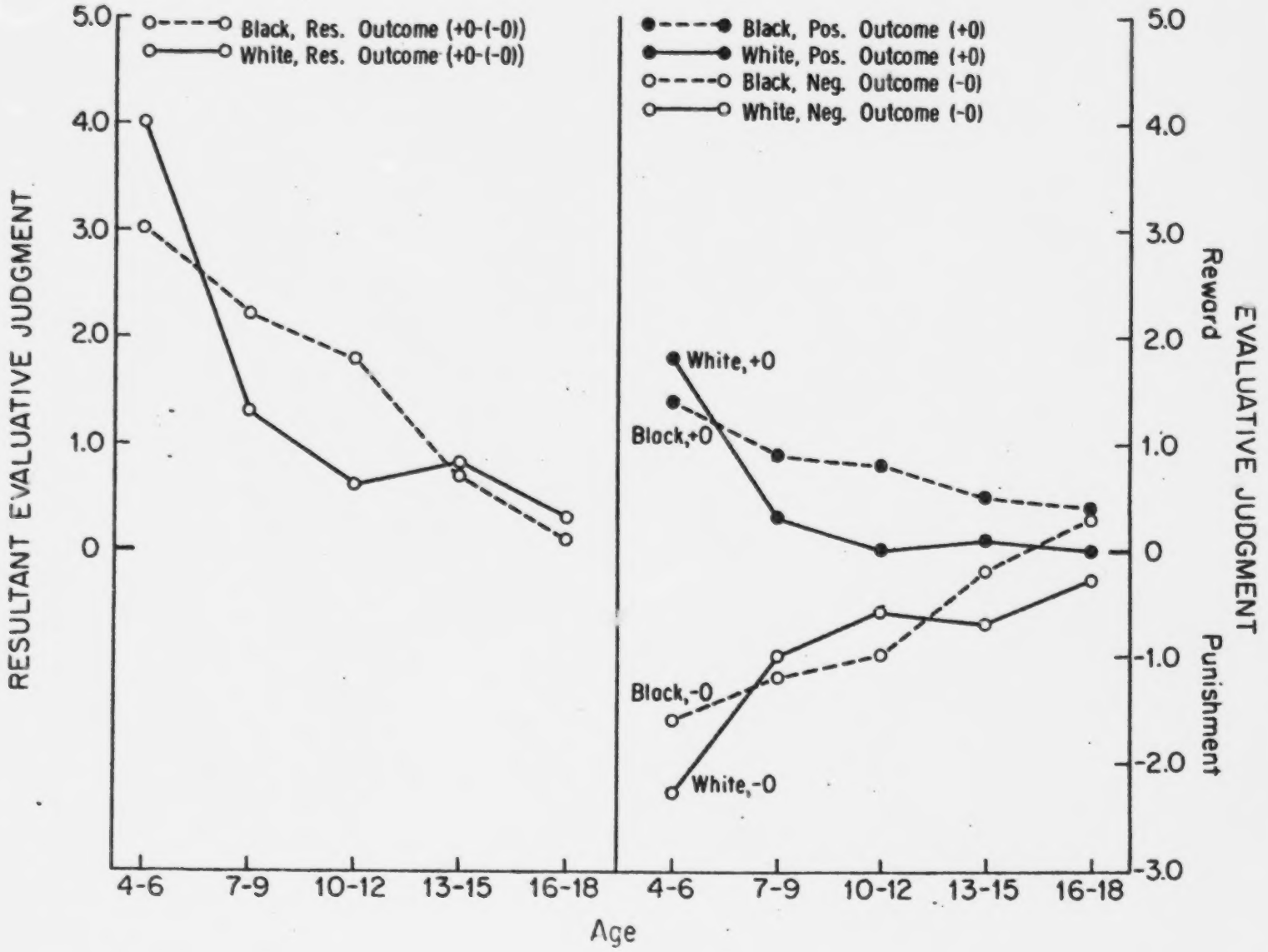
Pos. Outcome
Neg. Outcome
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 1

FIGURE 2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White, Res. Outcome (+0-(-0))
Black, Pos. Outcome (+0)
White, Pos. Outcome (+0)
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White, Neg. Outcome (-0)
RESULTANT EVALUATIVE JUDGMENT
EVALUATIVE JUDGMENT
Reward
Punishment
5.0
4.0
3.0
2.0
1.0
0
-1.0
-2.0
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White,+0
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4-6
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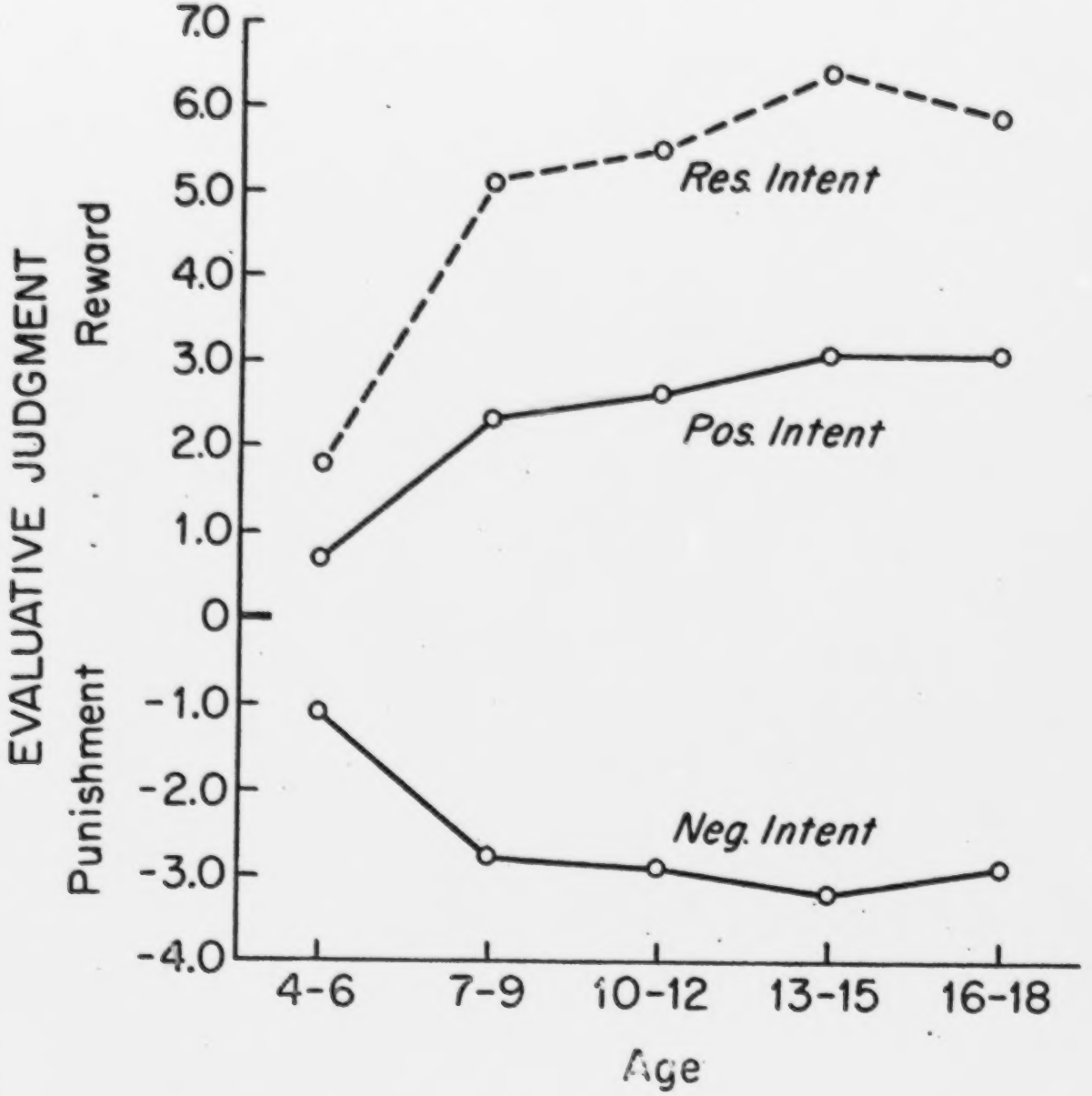
13-15
16-18
Age

FIGURE 3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Reward
Punishment
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5.0
4.0
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0
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-3.0
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Res. Intent
Pos. Intent
Neg. Intent
4-6
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10-12
13-15
16-18
Age

FIGURE 4

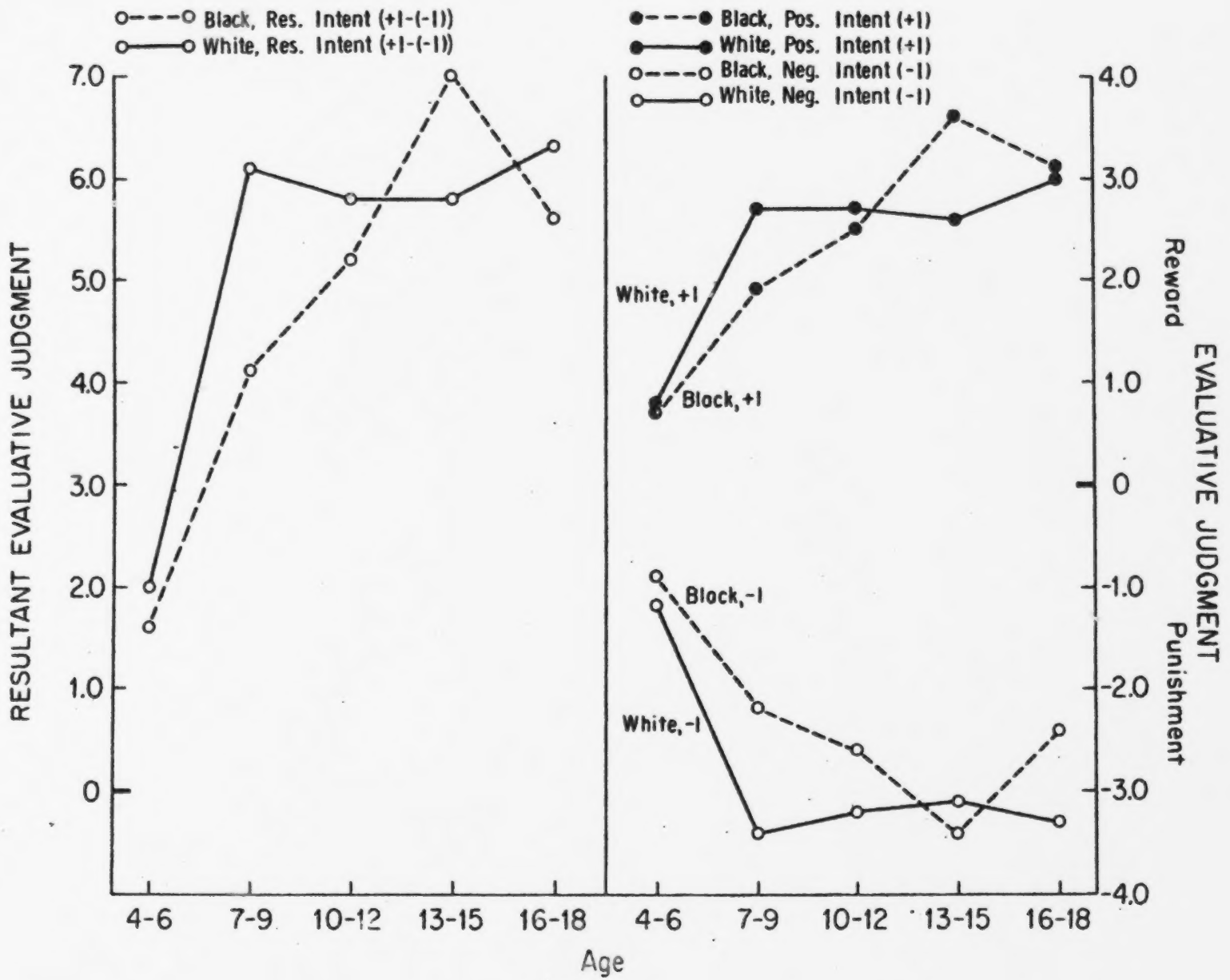

Black, Res. Intent (+1-(-1))
White, Res. Intent (+1-(-1))
Black, Pos. Intent (+1)
White, Pos. Intent (+1)
Black, Neg. Intent (-1)
White, Neg. Intent (-1)
RESULTANT EVALUATIVE JUDGMENT
EVALUATIVE JUDGMENT
Reward
Punishment
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
-4.0
White,+1
Block,+1
Block,-1
White,-1
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 5

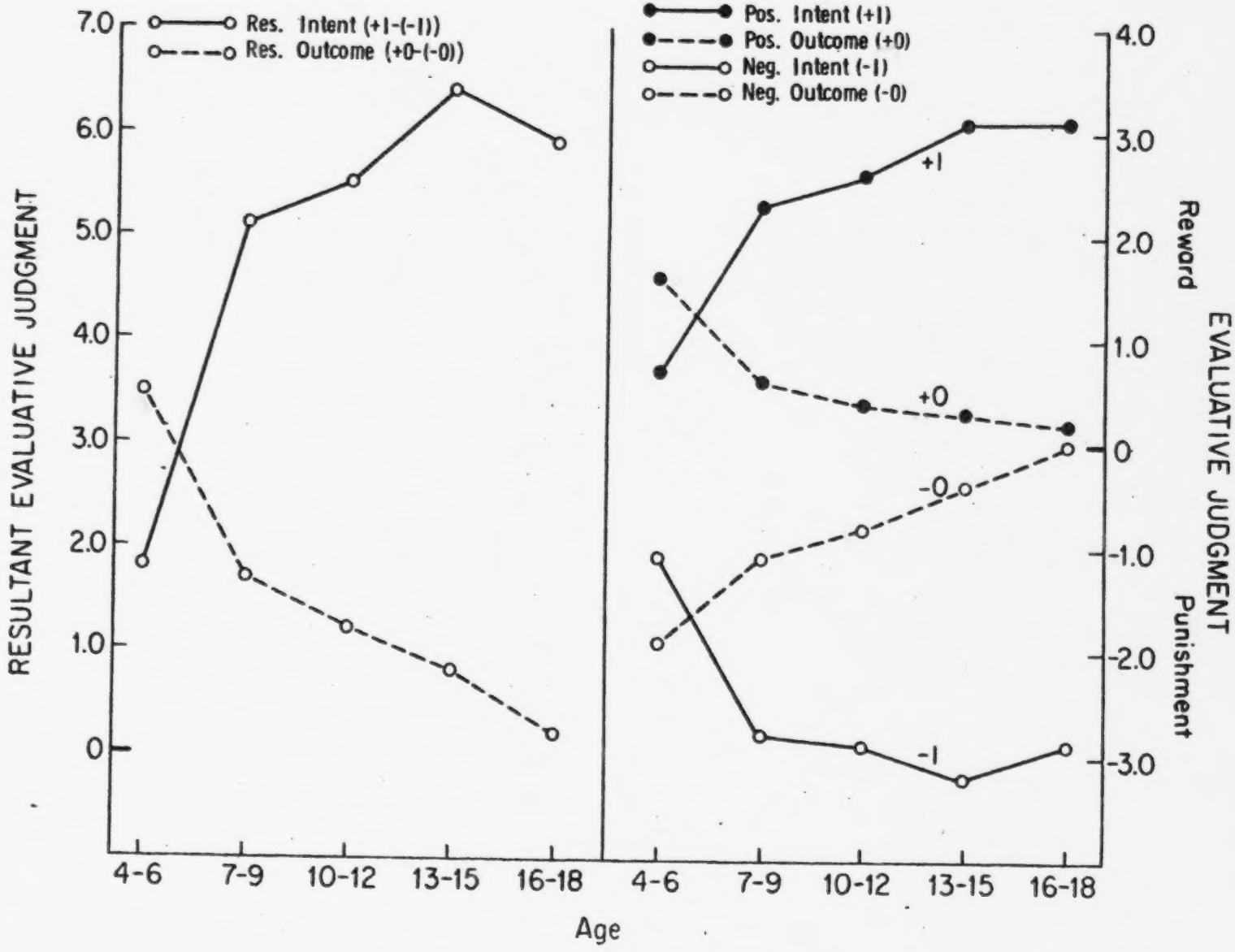

Res. Intent (+I-(-I))
Res. Outcome (+O-(-O))
Pos. Intent (+I)
Pos. Outcome (+O)
Neg. Intent (-I)
Neg. Outcome (-O)
RESULTANT EVALUATIVE JUDGMENT
EVALUATIVE JUDGMENT
Reward
Punishment
+I
+O
-O
-I
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 6

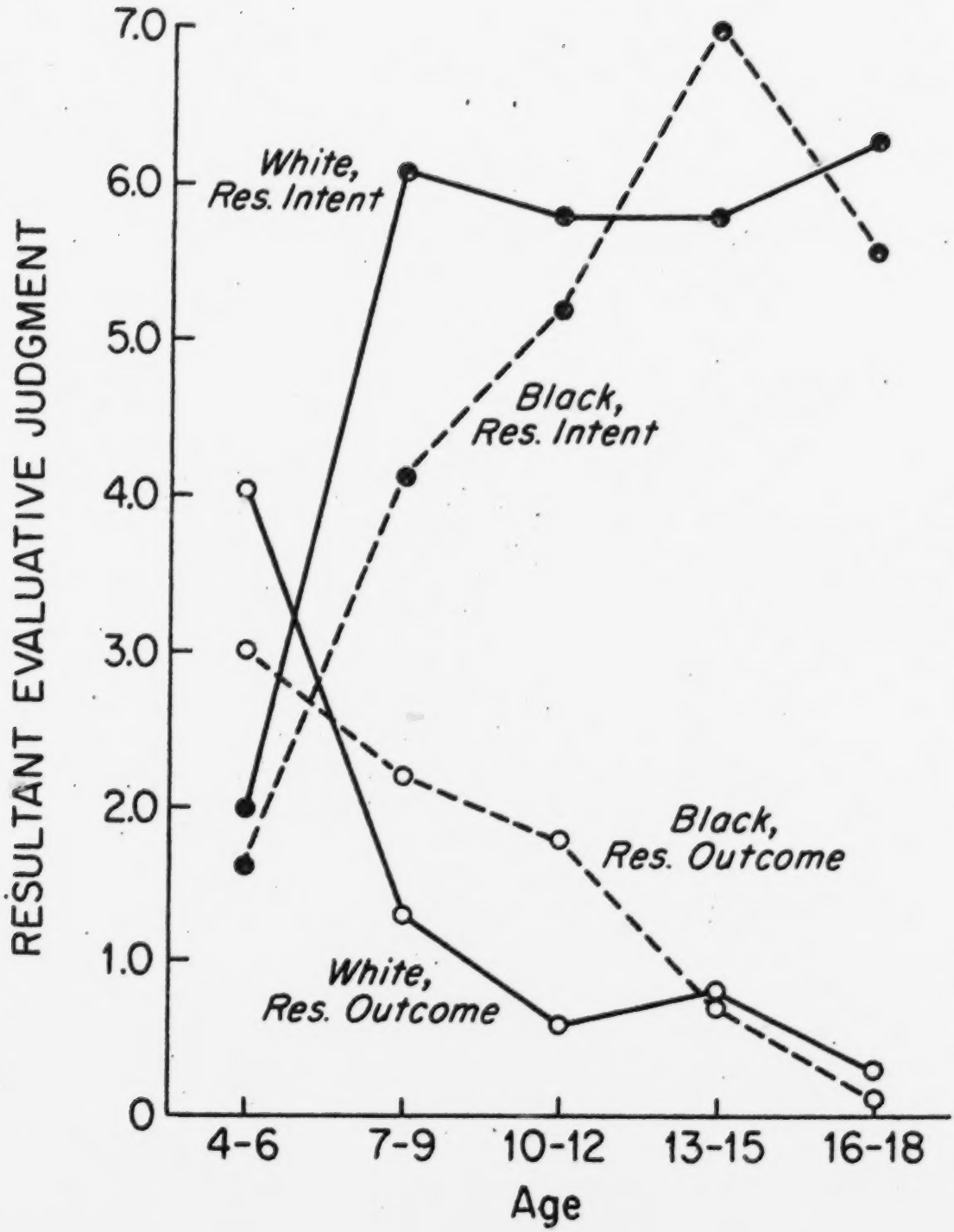

RESULTANT EVALUATIVE JUDGMENT
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
White, Res. Intent
Black, Res. Intent
Black, Res. Outcome
White, Res. Outcome
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 7

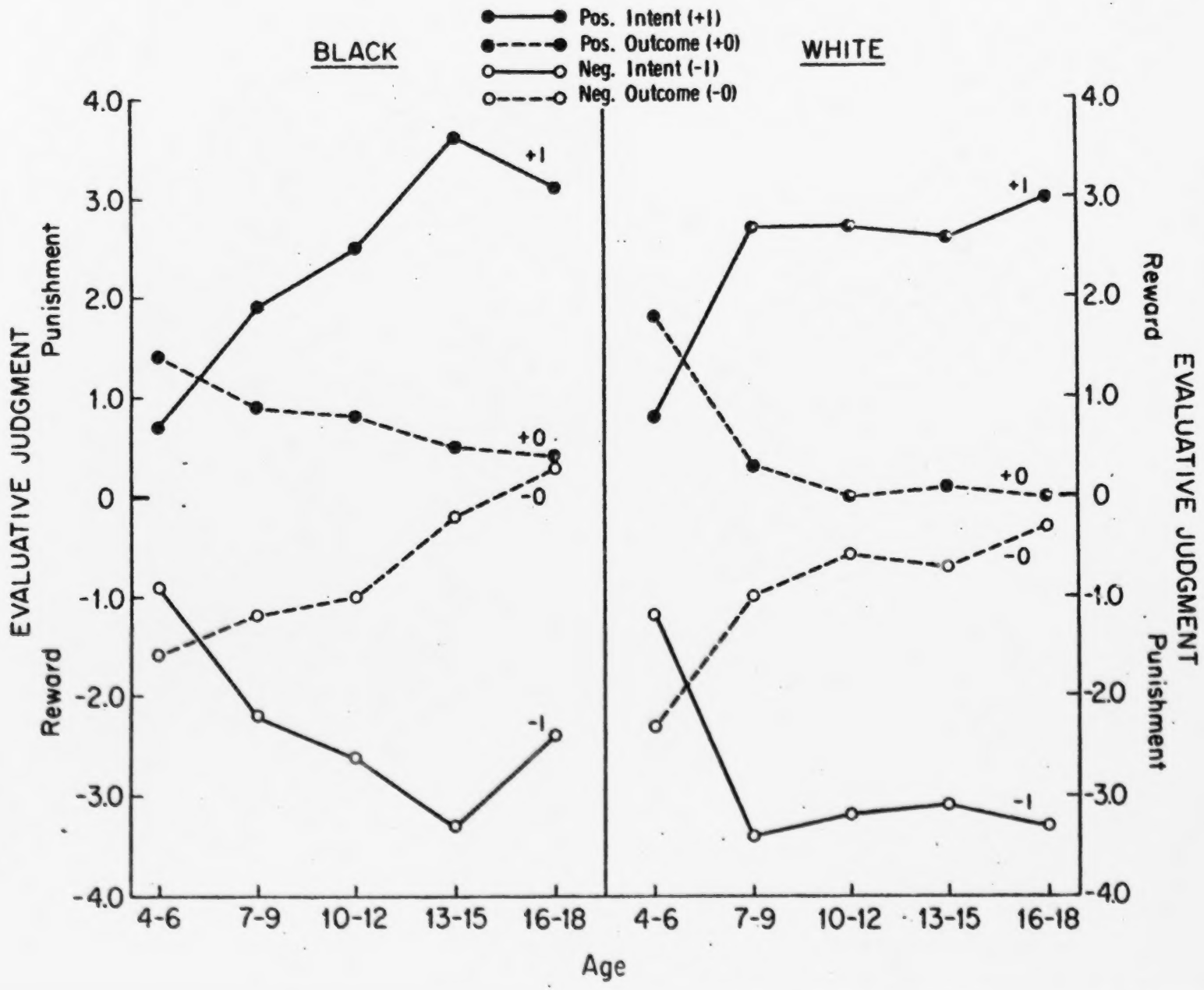

Pos. Intent (+1)
Pos. Outcome (+0)
Neg. Intent (-1)
Neg. Outcome (-0)
BLACK
WHITE
EVALUATIVE JUDGMENT
Punishment
Reward
4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
-4.0
+1
+0
-0
-1
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 8

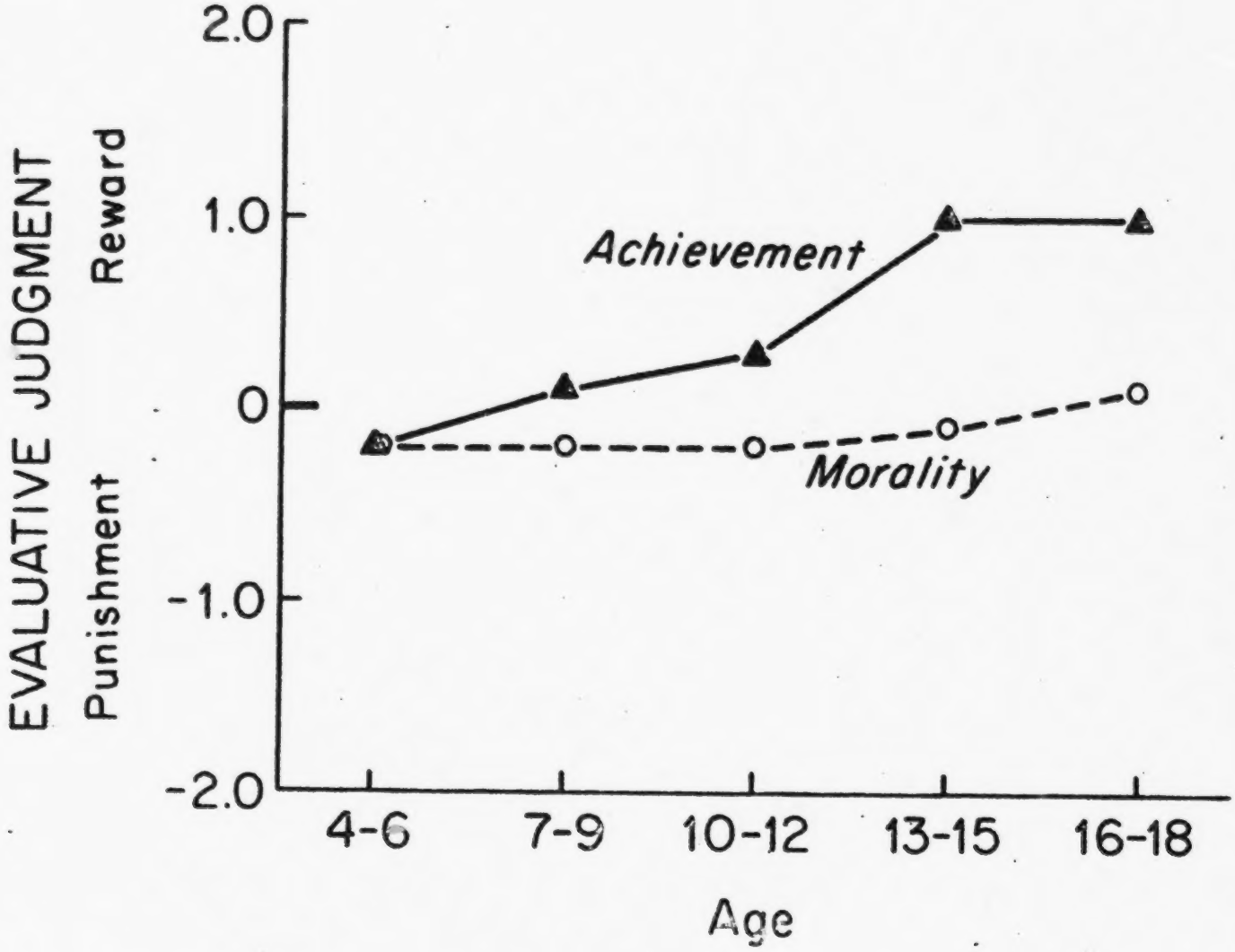

EVALUATIVE JUDGMENT
Punishment
Reward
2.0
1.0
0
-1.0
-2.0
Achievement
Morality
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 9

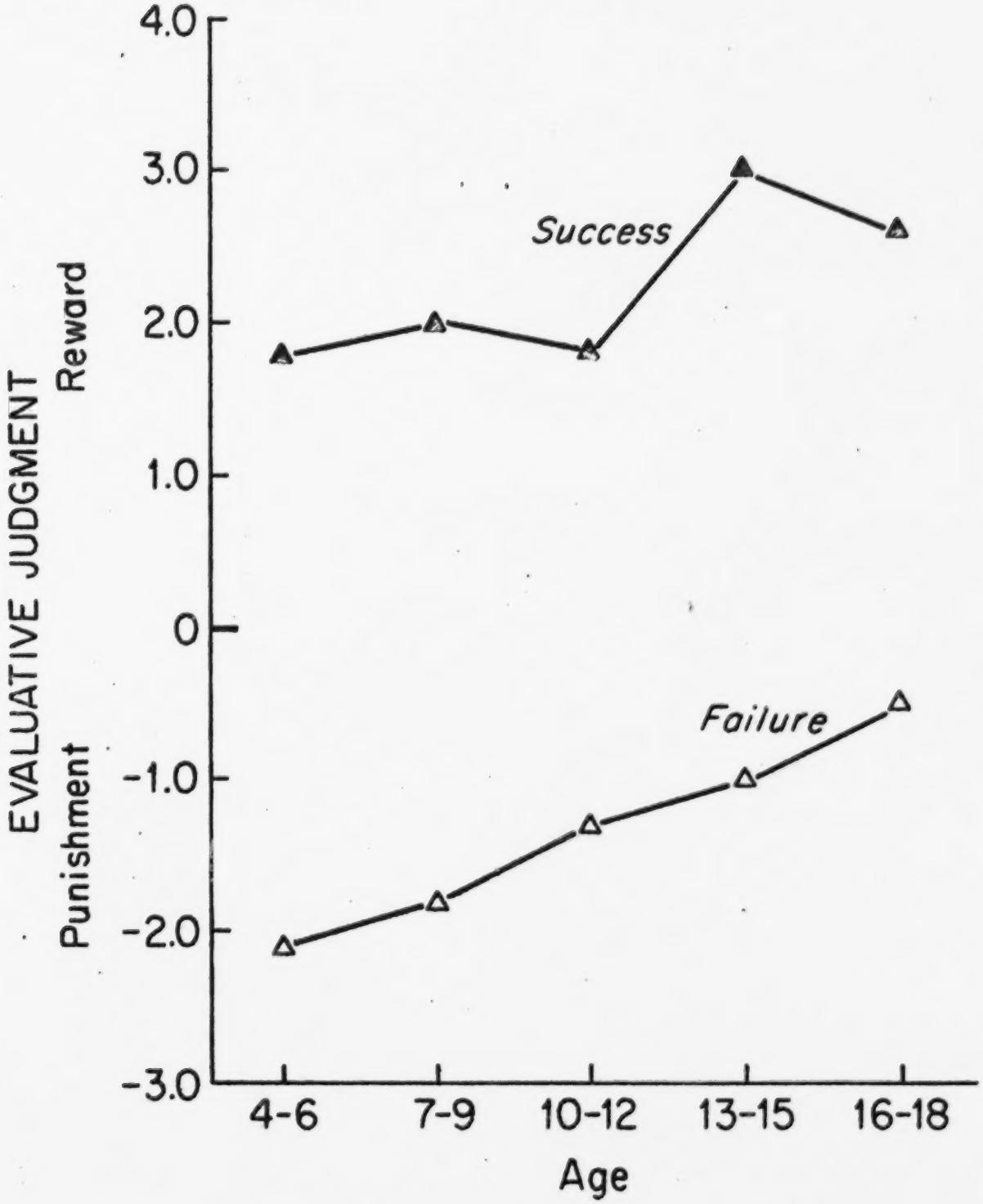

EVALUATIVE JUDGMENT
Reward
Punishment
4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
Success
Failure
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 10

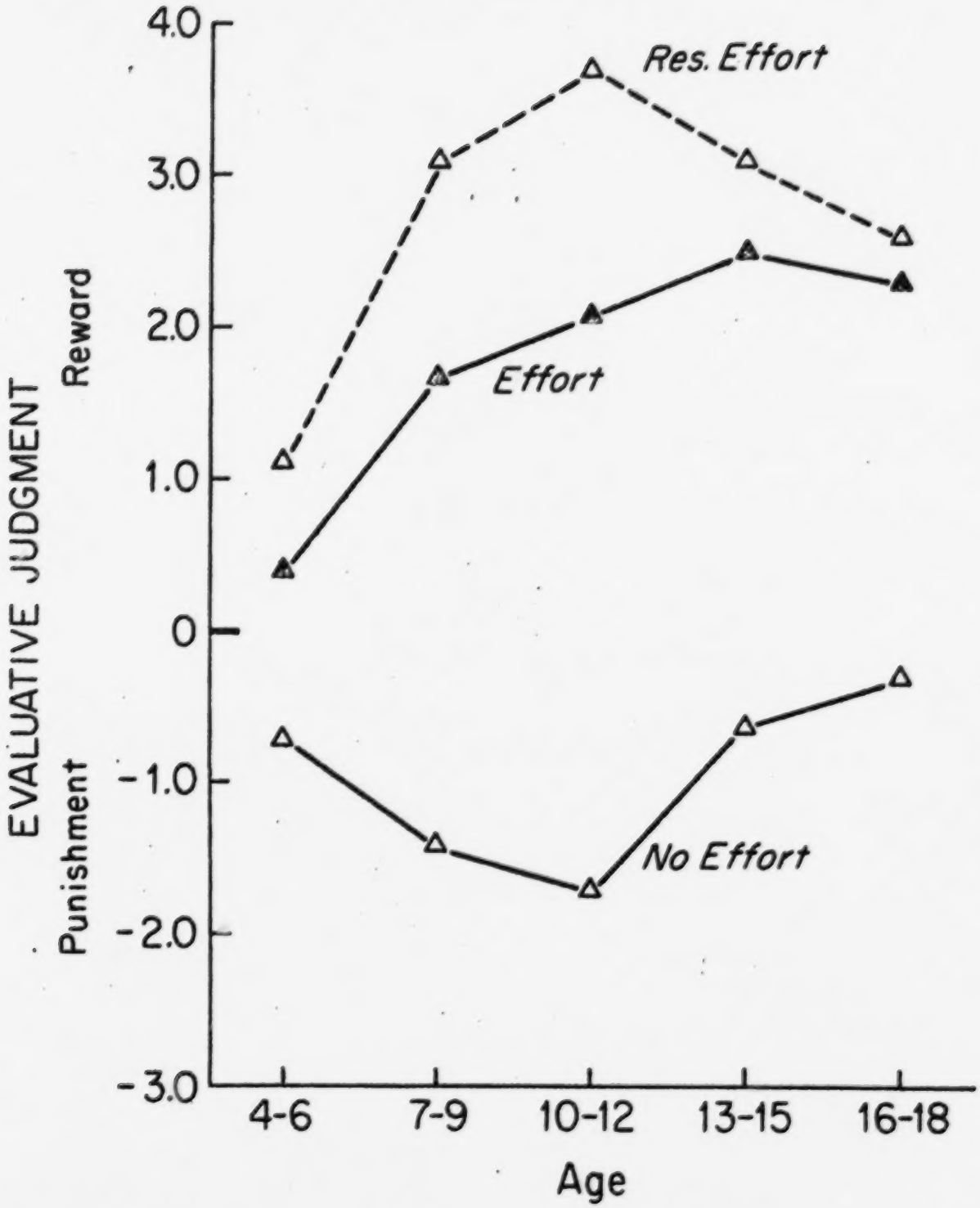

4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
Res. Effort
Effort
No Effort
EVALUATIVE JUDGMENT
Reward
Punishment
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 11

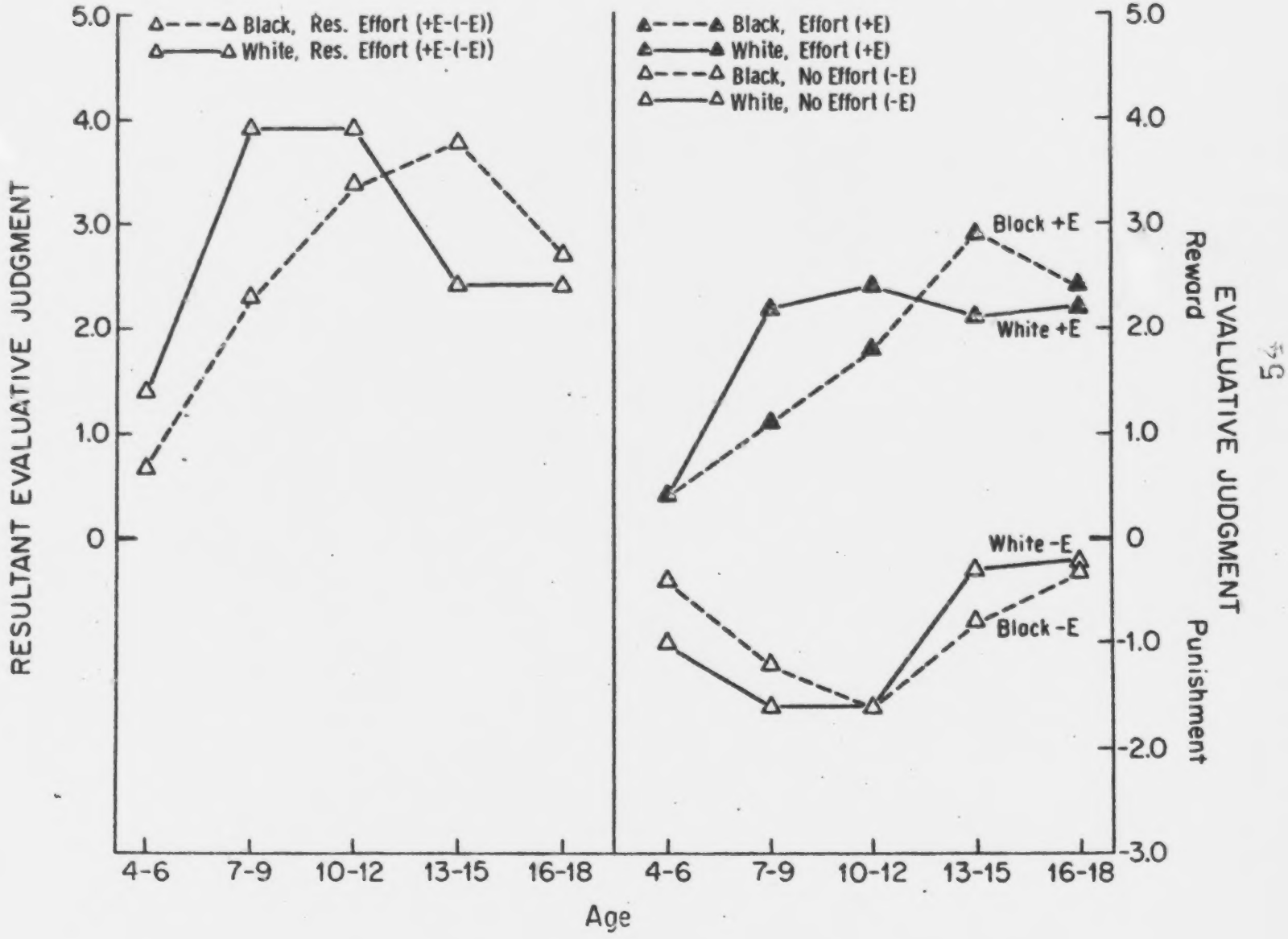

Black, Res. Effort (+E-(-E))
White, Res. Effort (+E-(-E))
RESULTANT EVALUATIVE JUDGMENT
5.0
4.0
3.0
2.0
1.0
0
4-6
7-9
10-12
13-15
16-18
Age
Black, Effort (+E)
White, Effort (+E)
Black, No Effort (-E)
White, No Effort (-E)
Block +E
White +E
White -E
Block -E
Reward
Punishment
EVALUATIVE JUDGMENT
-1.0
-2.0
-3.0

FIGURE 12

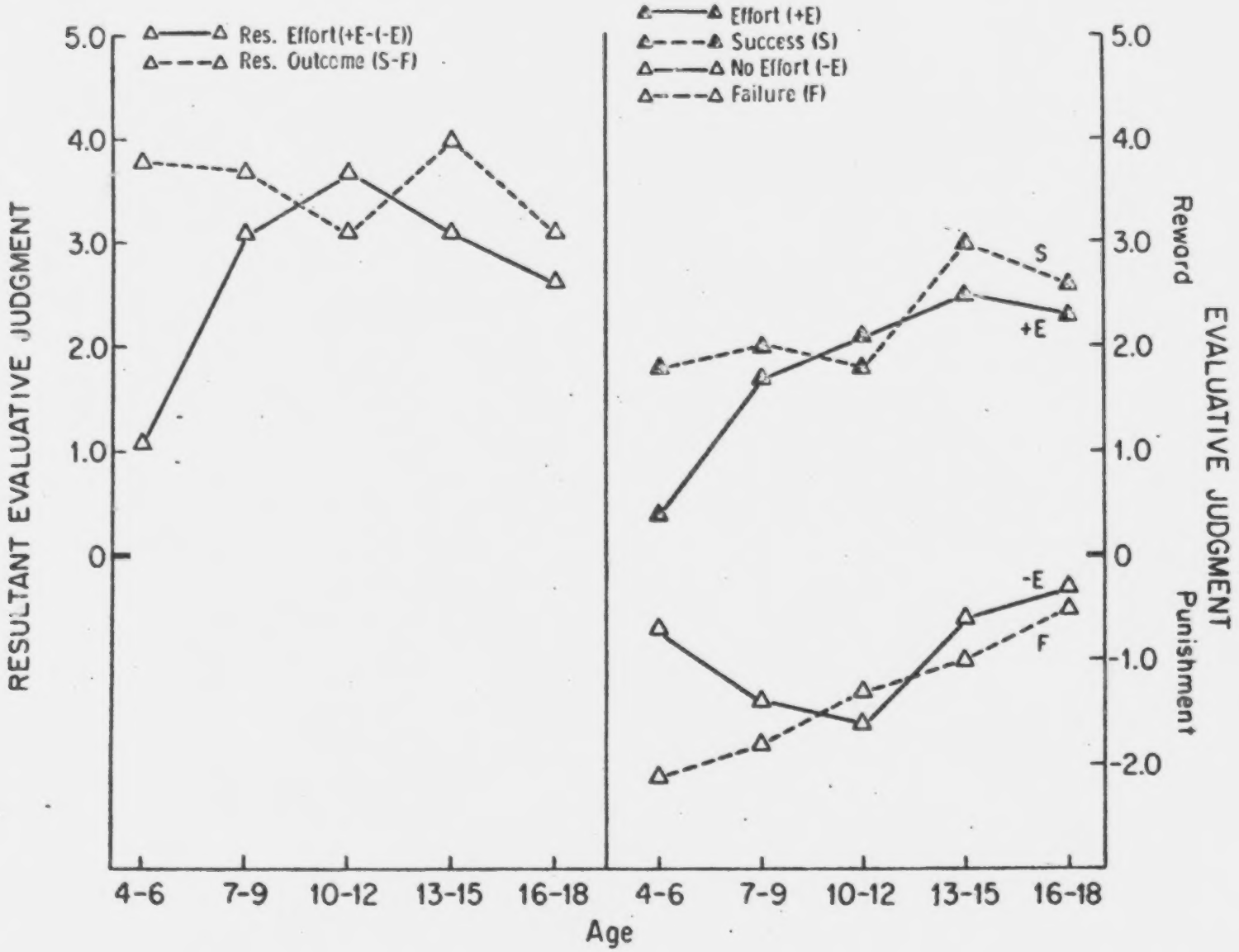

Res. Effort (+E-(-E))
Res. Outcome (S-F)
RESULTANT EVALUATIVE JUDGMENT
5.0
4.0
3.0
2.0
1.0
0
4-6
7-9
10-12
13-15
16-18
Age
Effort (+E)
Success (S)
No Effort (-E)
Failure (F)
S
+E
-E
F
Reward
Punishment
EVALUATIVE JUDGMENT
-1.0
-2.0

FIGURE 13

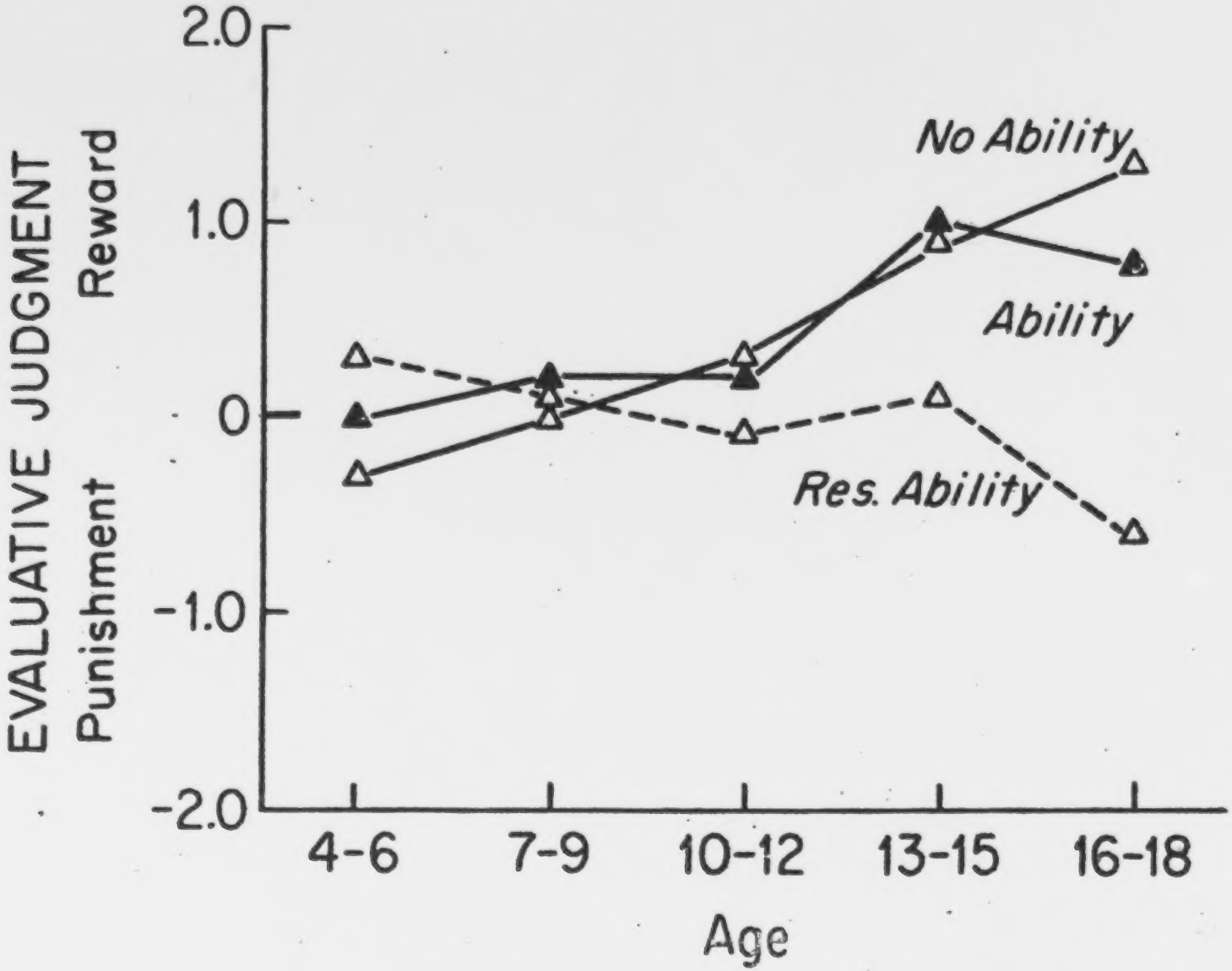

EVALUATIVE JUDGMENT
Punishment
Reward
2.0
1.0
0
-1.0
-2.0
No Ability
Ability
Res. Ability
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 14

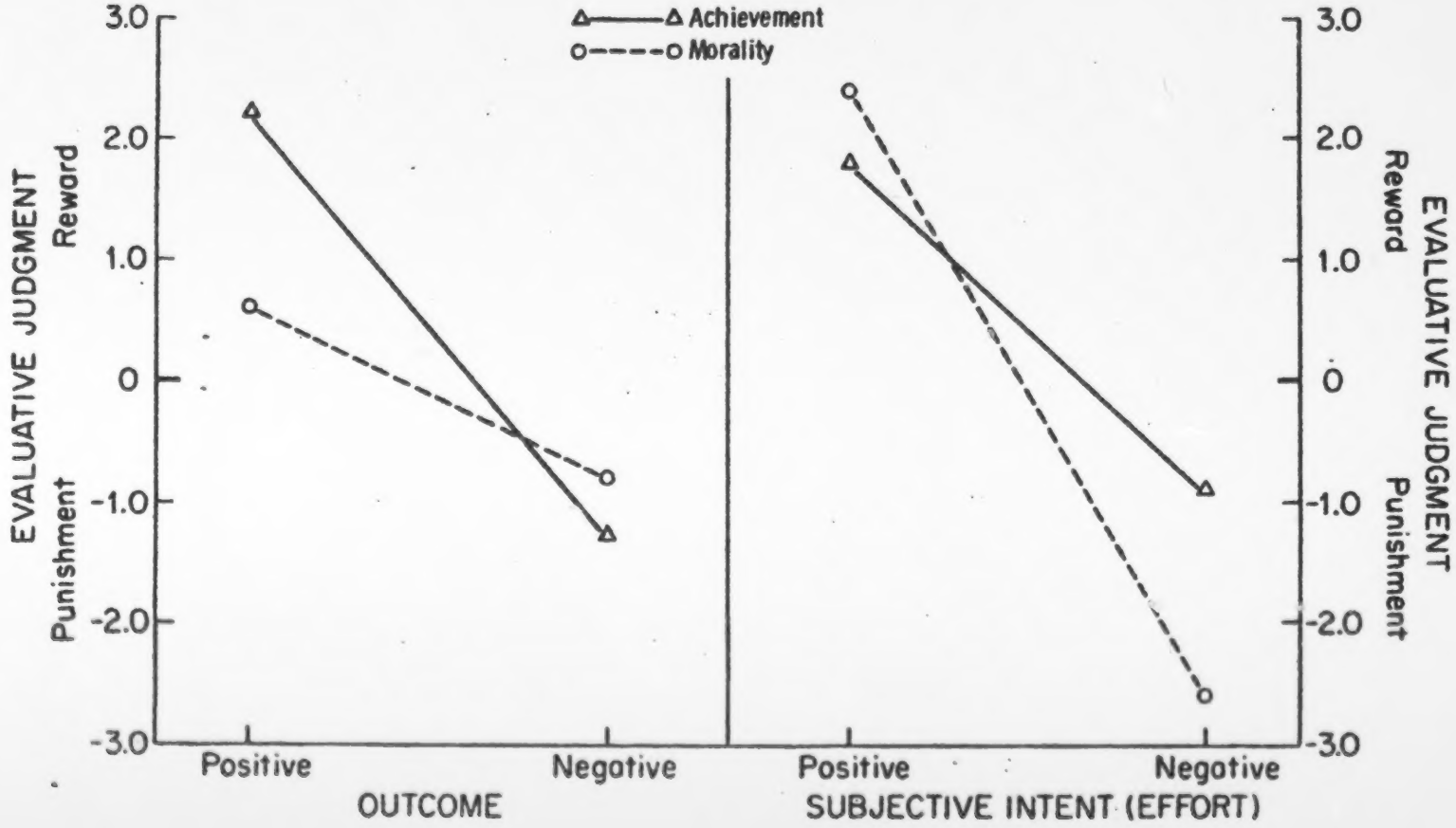

Achievement
Morality
EVALUATIVE JUDGMENT
Reward
Punishment
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
Positive
Negative
OUTCOME
SUBJECTIVE INTENT (EFFORT)

FIGURE 15

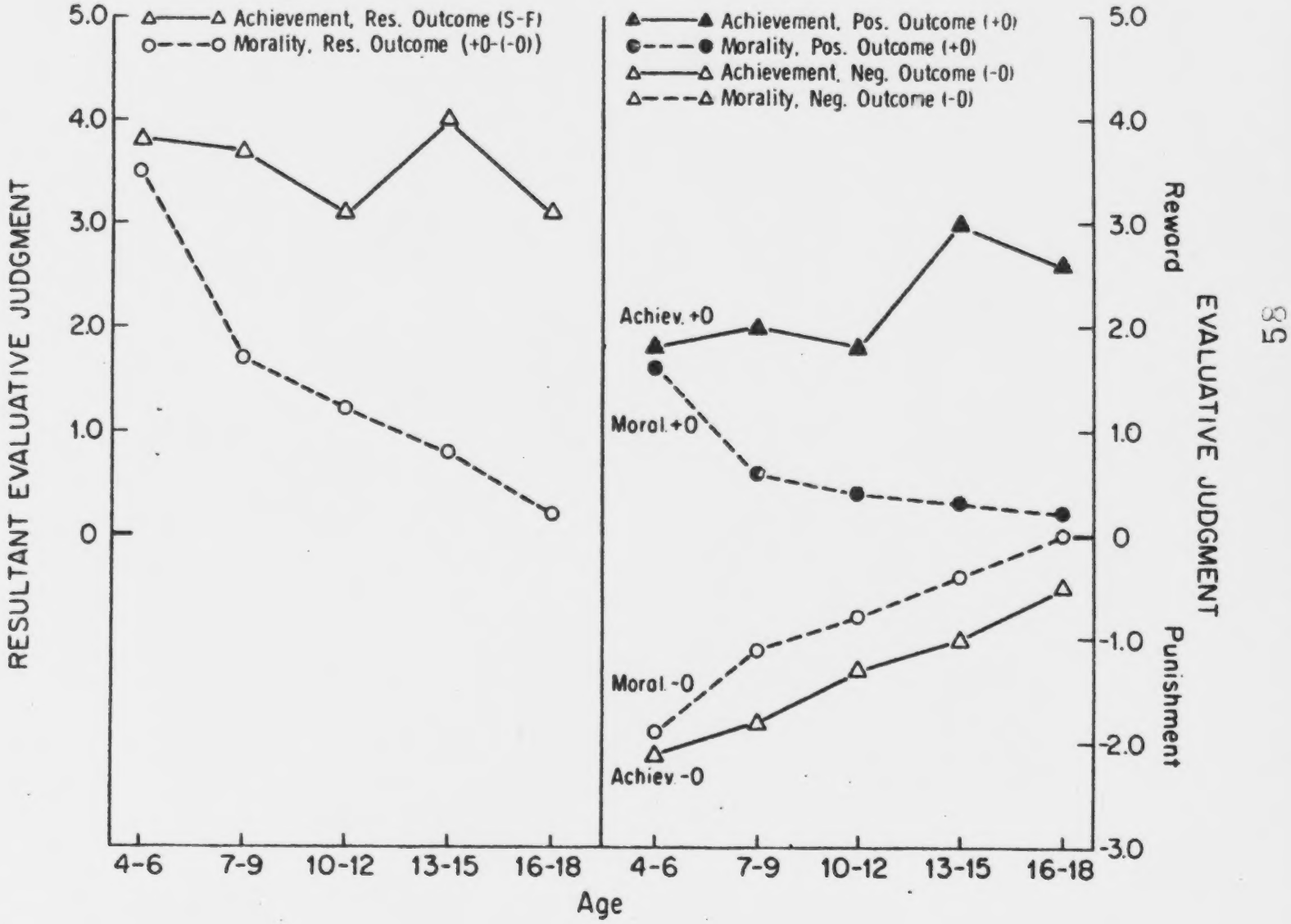

Achievement, Res. Outcome (S-F)
Morality, Res. Outcome (+0-(-0))
Achievement, Pos. Outcome (+0)
Morality, Pos. Outcome (+0)
Achievement, Neg. Outcome (-0)
Morality, Neg. Outcome (-0)
RESULTANT EVALUATIVE JUDGMENT
EVALUATIVE JUDGMENT
Reward
Punishment
Achiev. +0
Moral. +0
Moral. -0
Achiev. -0
5.0
4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 16

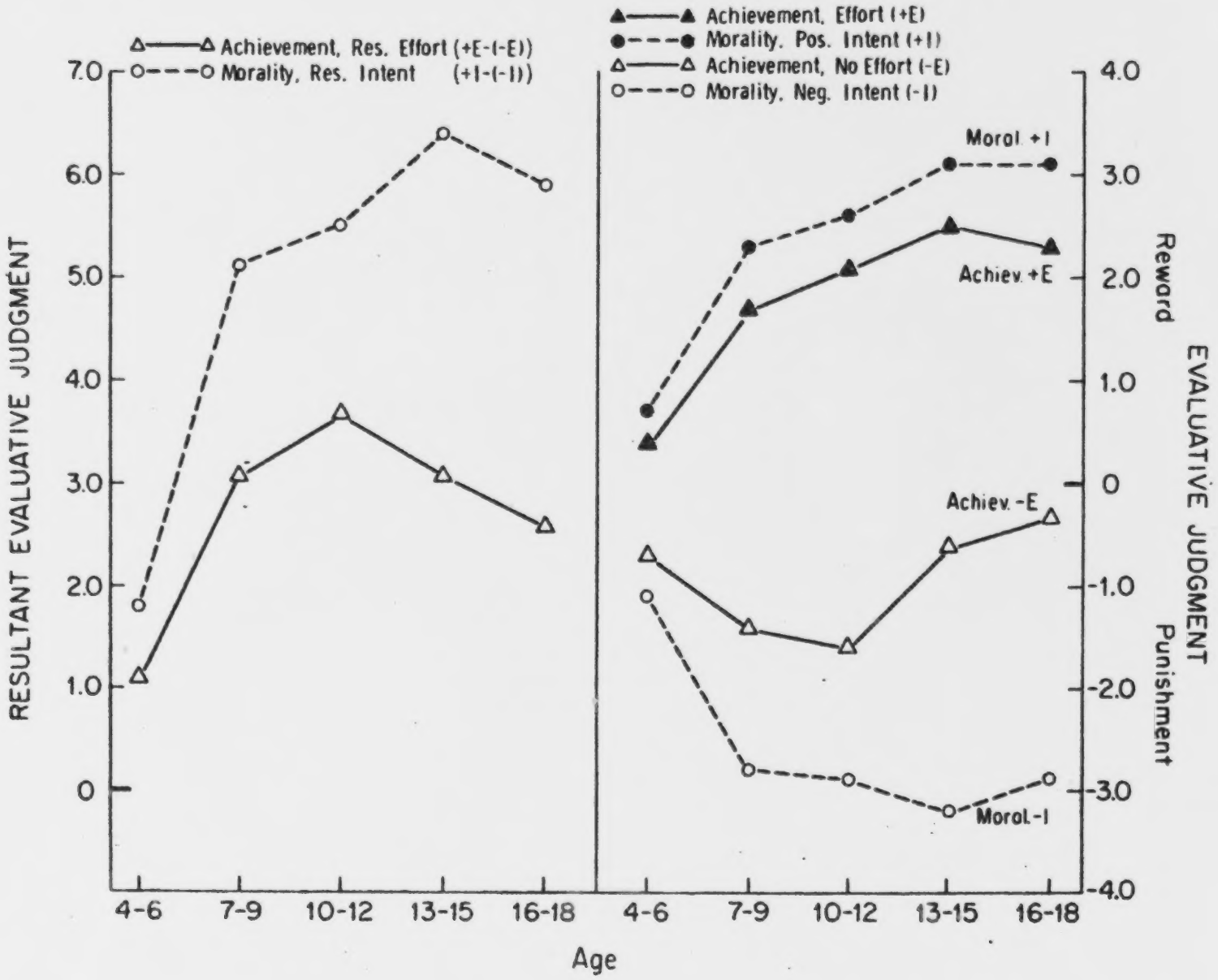

Achievement, Res. Effort (+E-(-E))
Morality, Res. Intent (+I-(-I))
RESULTANT EVALUATIVE JUDGMENT
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
4-6
7-9
10-12
13-15
16-18
Achievement, Effort (+E)
Morality, Pos. Intent (+I)
Achievement, No Effort (-E)
Morality, Neg. Intent (-I)
Moral. +I
Achiev. +E
Achiev. -E
Moral.-I
4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
-4.0
Reward
Punishment
EVALUATIVE JUDGMENT
Age

FIGURE 17

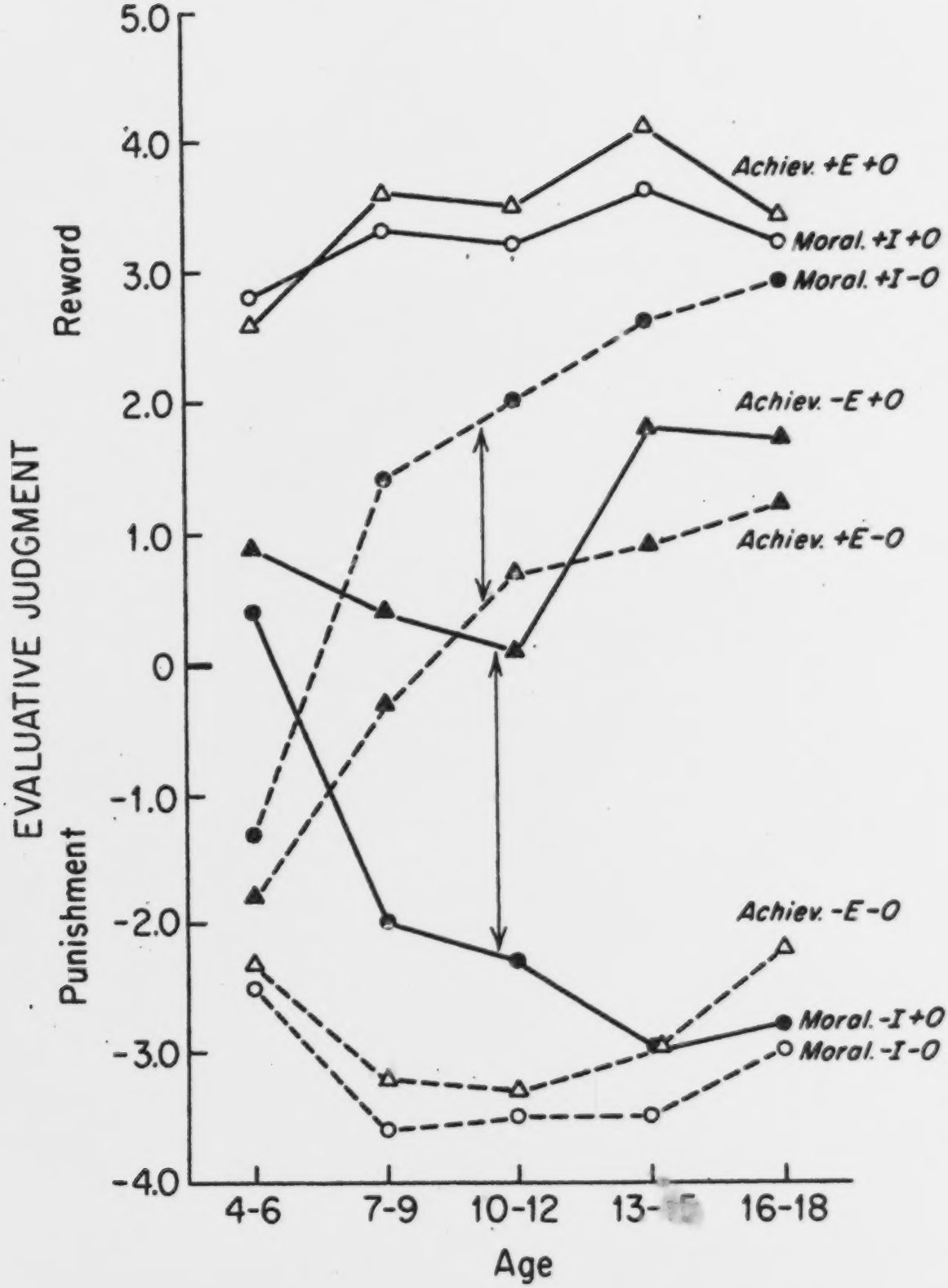
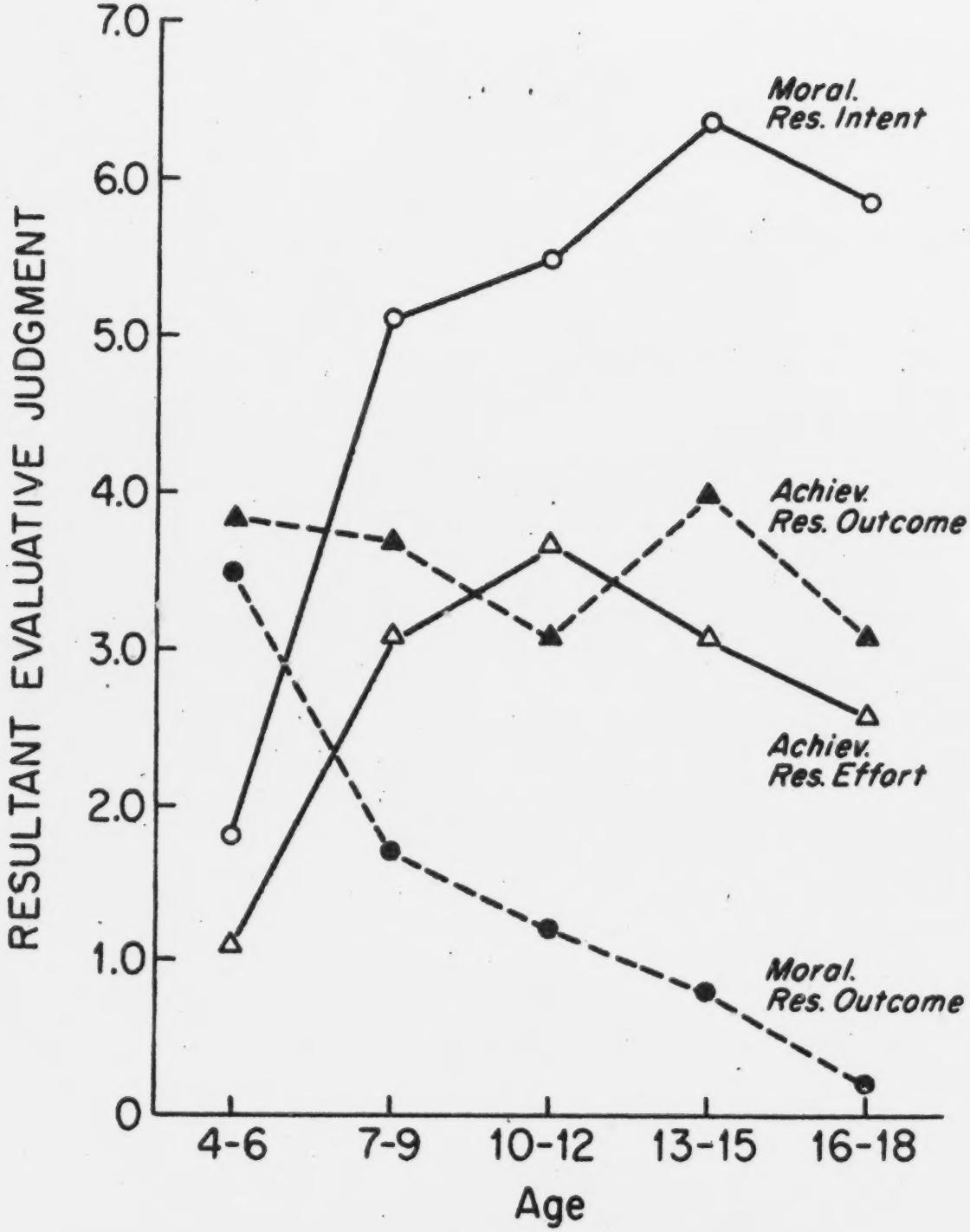

5.0
4.0
3.0
2.0
1.0
0
-1.0
-2.0
-3.0
-4.0
EVALUATIVE JUDGMENT
Reward
Punishment
Achiev. +E +O
Moral. +I +O
Moral. +I -O
Achiev. -E +O
Achiev. +E -O
Achiev. -E -O
Moral. -I +O
Moral. -I -O
4-6
7-9
10-12
13-15
16-18
Age

FIGURE 18


RESULTANT EVALUATIVE JUDGMENT
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
Moral. Res. Intent
Achiev. Res. Outcome
Achiev. Res. Effort
Moral. Res. Outcome
4-6
7-9
10-12
13-15
16-18
Age